SA931

BA931e, Version 6.1a / 04.2001

Installation-, User- and Maintenance Manual

SIUS AG

Im Langhag 1
CH-8307 Effretikon/Switzerland
Tel. (0041) 52343 91 91 • Fax (0041) 52 343 12 14

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SIUS AG
Im Langhag 1
CH-8307 Effretikon/Switzerland
Tel. (+ 41 52) 343 91 91 • Fax (+ 41 52) 343 12 14
Internet: http://www.sius.com • E-Mail: admin@sius.com

III. Concept and Application Possibilities

The SA931 is a state-of-the-art Automatic Electronic Target Scoring System based on the new LON-Network-Technology (LON@Motorola, Echelon).

This most modern network-technology allows the use of RJ-45 cables which is the easiest and cheapest , because it is the most used, cabling with a free bus-topology.

The installation is so easy that it can be made by the customer him self.
The installation of a "10 meter Air Rifle/Pistol" or a "50 meter Small Bore Rifle/ Pistol" systems can be quickly installed requiring no special tools or special skills.

The use of highly integrated electronic-components grants an unbeatable value formoney and at the same time the best reliability.

All the known ISSF disciplines from 10 meter air weapons (incl. Running target) up to 300 meter big bore rifles are pre-programmed in one and the same device.

With the SA931-LON Automatic Electronic Precision Target Scoring System the following target systems are available:

- 10 meter Air Rifle and Air Pistol target - Type S10-LON.

  This target mounted with an force front frame and placed in a weather protected place, can also be used with small bore weapons (50m disciplines).

  - 10 meter Running Target - Type RT10-LON.
  - 50 meter Small Bore Rifle and Pistol target - Type S50-LON.
  - 25 meter Rapid Fire Pistol, Type S25m RFP-LON.

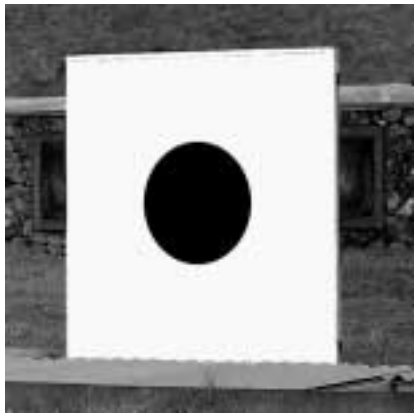
  Special Note. The 25- and 50-meter system uses the same S50 target. However, red/green signal lights, used for „timed"-firing of official Rapid Fire Pistol Matches, have to be mounted on the S50-LON (25m RFP-LON) Targets.

  - 300 meter Big Bore Rifle target - Type S300-LON.
  - The 50/100 meter Big Bore Pistol (9mm, etc.) Target - Type S100-LON and the ISSF/DJF Hunting Target - Type SKL-LON are in preparation.

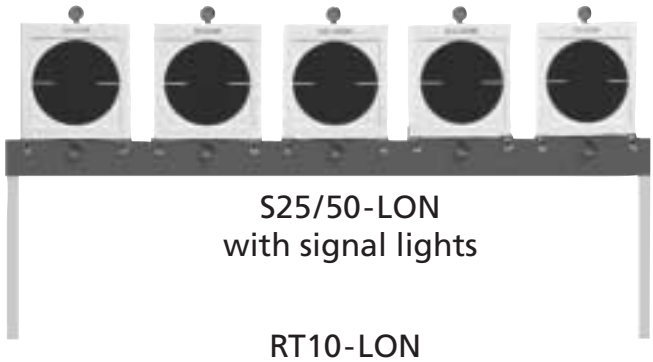
For the ease of use and easyer learning the system operations and the program structure and functioning incorporates the operation and functioning of the SA921 targetry System.

S10-LON

S300-LON



S25/50-LON



S25/50-LON
with signal lights

RT10-LON

CU931 with M931

CU931 with
optional
Printer D931

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1. Sets, Devices and Targets

1.1 Basic Installation

For the basic installation you need a power supply a connection cable (target side - shooters place KV020 or KV021) and two LON-bus terminations.

For every system you need:

- 2 Terminators (electrical resistance) VJ45R of the LON-Bus and at least:
- 1 Power supply box (NT931-2 for max. 2 lines or NT931-10 for max. 10 lines)
- 1 Connection cable target side - shooters place KV020-*or KV021-* (* = cable length in meters)

For shoot-distances up to 100 meter the power supply for the targets is provided by a 4-pole connection cable target side - shooters place (KV020-*). (* = cable length)

For shoot distances over 100 meter an additional power supply for the targets is needed. This allows the use of a 2-pole Connection cable target side - shooters place (KV021-*). (* = cable length).

1.2 Shooting Range Set FP931

One shooting range set FP931 contains all the items, which are used for the operation of one shooting lane:

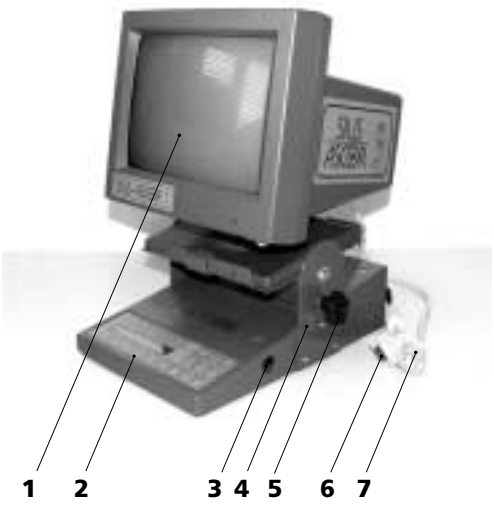
–	1	M931	VGA Monitor 9"
–	1	CU931	Control unit SA931
–	1	HST931	Monitor holder (for the mounting see chapter 1.2.1)
–	2	aa203-1.7	Data bus-cable (length 1.7m)
–	1	VJ45Y	Distribution box for the data LON-bus-cables
–	1	KA-FP931	Short description of the Shooting range set FP931

Additionally you need:

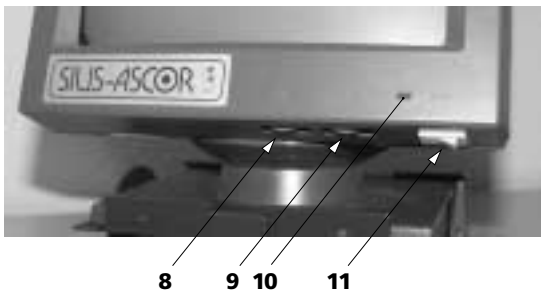
–	1	aa***	Country specific power supply cable for the monitor

*** = (nation-code) 101 = GB, 102 = USA, 110 = Schuko, 126 = AUS
(For a voltage between 90 and 260 VAC, the tension is regulated automatically)

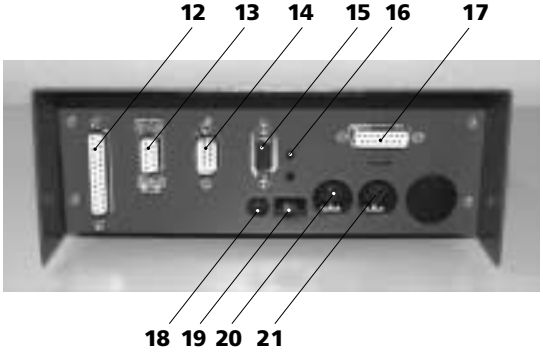
Overview



Contrast control and brightness control

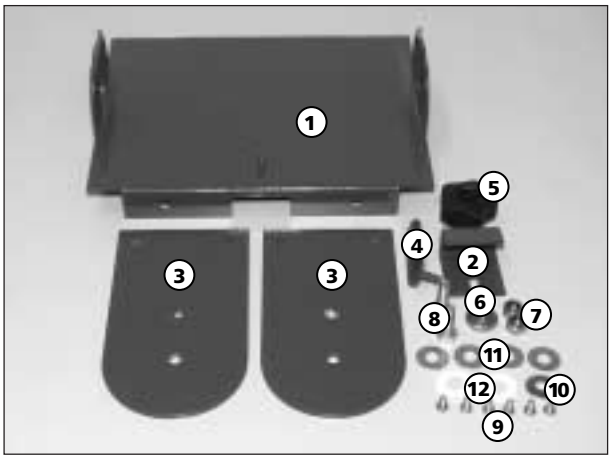


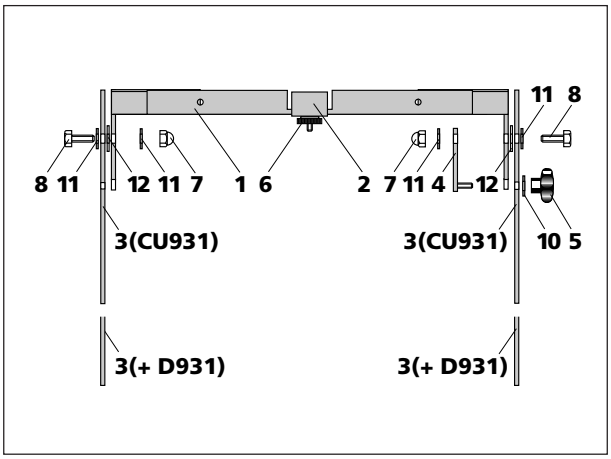
Rearview



1. Monitor M931 9"
2. Control unit CU931
3. Connection for a barcode reader (in preparation)
4. Device holder HST931
5. Locking system
6. Video cable
7. Monitor power cable (90-260 Vac)
8. Contrast control
9. Brightness control
10. Mains voltage pilot lamp
11. Main switch
12. Printer port (Centronics)
13. "KV014 cable socket" to connect Distributor (MD931), see page 63
14. RS232-port
15. Video-signal socket for the monitor (VGA)
16. Service buttons (top: MODE, bottom: SEVICE)
17. Peripherals socket, ex: Individual Score Board
18. Power supply socket (24-26 Vdc)
19. RJ-45 socket (network)
20. Remote control, and running target control unit port
21. Remote control, and running target control unit port

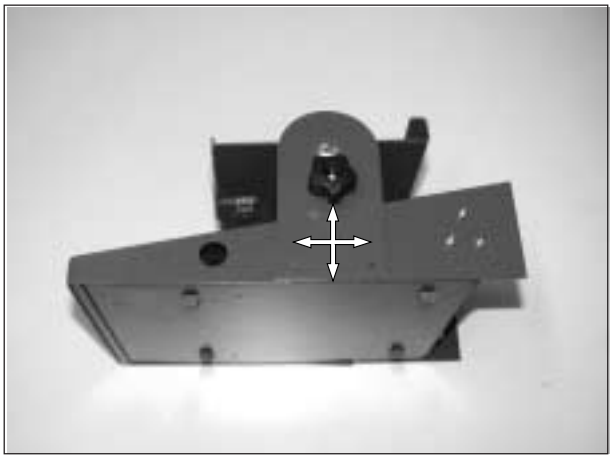
1.2.1 Assemble the Device Holder HST931





pos.	Designation	art. no.	Amount
1.	Monitor plate of HST931	HST931A002	1
2.	Angled holder of HST931	HST931A001	1
3.	Small side plates (only CU931)	HST931A003	2
3.	Big side plates (CU931+D931)	HST931A004	2
4.	Lock plate	HST931A005	1
5.	Star shaped knob, M5	ama58	1
6.	Knurled nut M4	amar004	1
7.	Self-locking hexagon nut M6	amms06	2
8.	Hexagon socket screw M6x16	ams6-06x16	2
9.	Raised oval screw M3x6	amsl03x06	6
10.	Flat washer	amu011	1
11.	Flat washer	amu021	4
12.	Flat washer	amup005	2

If you use the device holder HST931 to assemble only the monitor to the control unit, you can use the small side plates pos. 3. If you want to mount the printer D931onto the control unit, you have to take the big side plates.
You can also put the locking system on the left side, for this just reverse pos. 4, 5 and 10.
Slide the holder over the control unit, fit the holes to the threads and tighten the three screws M3x6 on both sides.



Assemble the monitor and control unit holder as shown above.
Tighten the hexagon socket screw in pos. 8 together with the self locking hexagon nut In pos. 7.

Slide the monitor with it's plate into the fitting position and lock it with the angled holder by screwing in the knurled nut.

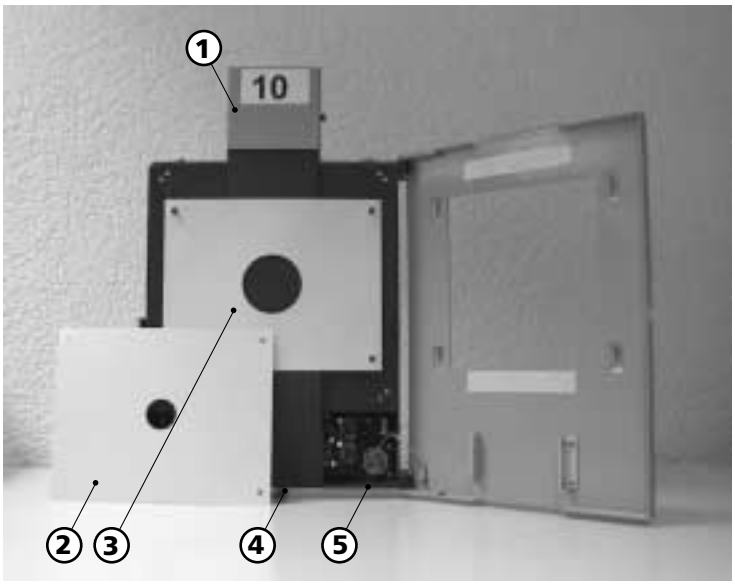
1.3 The Air Rifle and Air Pistol target set S10-LON

The Air Rifle and Air Pistol target S10-LON set consists of all parts needed to install one lane of a 10 meter range.

Which are:

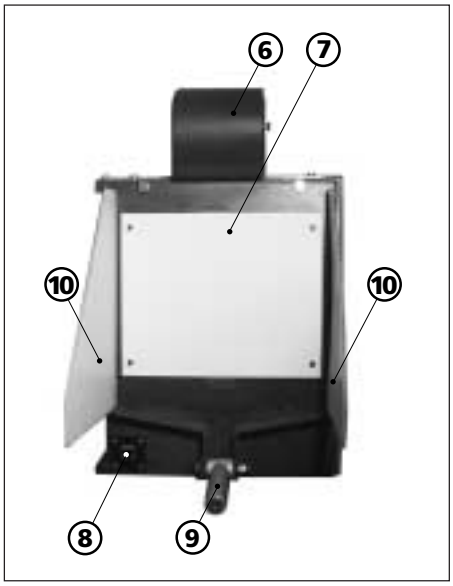
– 1	S10-LON	Electronic target consistent of:
	5 S20A022	Target front mask ISSF Air Rifle
	5 S20A023	Target front mask ISSF Air Pistol
	1 S20A037	Backing target
	1 S20D001	Paper tape coil 35m
– 2	KFS20A005	Projectile spread protection
– 1	S20A019	Paper tape coil axe
– 2	aa203-1.7	Data bus-cable
– 1	VJ45Y	Distribution box for the data bus-cables
– 1	WHS10	Wall mounted target holder plate
– 1	KA-S10	Instruction sheet

The Air Rifle and Pistol target S10-LON, front, open



1. Paper tape coil cover
2. Target front mask ISSF Air Rifle S20A022
3. Target front mask ISSF Air Pistol S20A023
4. Paper tape
5. Target electronic

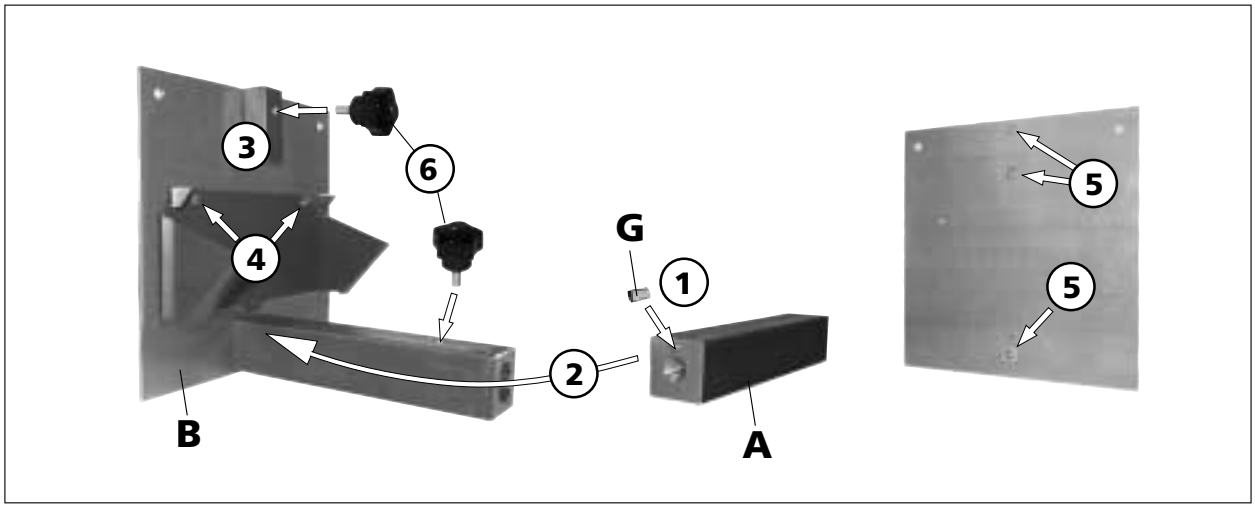
Rear



6. Paper tape coil
7. Backing target S20D001
8. RJ45-socket
9. Mounting mandrel
10. Projectile spread protection

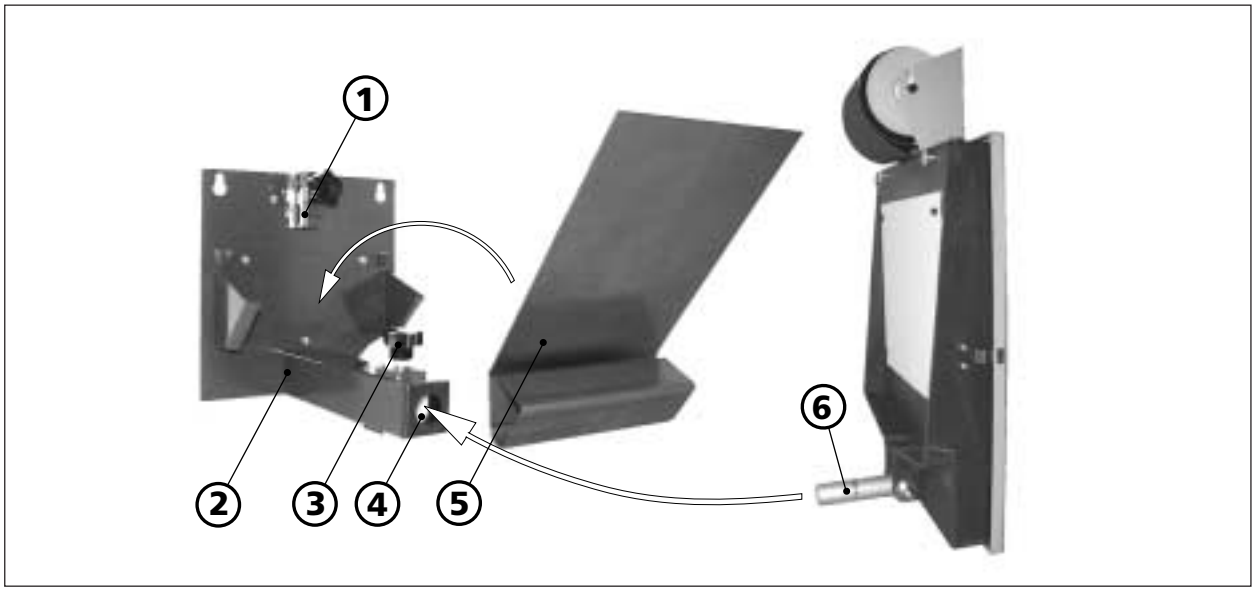
This target mounted with an **force front frame** and placed in a weather protected place, can also be used for small bore weapons (50m disciplines).

1.3.1 Assemble the Wall Mounted Target Holder WHS10



1. Screw the M4x10 thread pos. G (torsion security) into the holder pos. A
2. Put the holder pos. A onto the plate pos. B and lock it with the counter sunk screw(M8x20).
3. Fix the mounting bracket for optional target illumination (BLS20) (with two M4x10 screws). The inner thread, who takes the star shaped knob, has to be on the upper side.
4. Mount the butt holder from the front side onto the plate (three M4x5 raised oval screws).
5. Tighten the screws from the rear side.
6. Screw in the star shaped knobs.

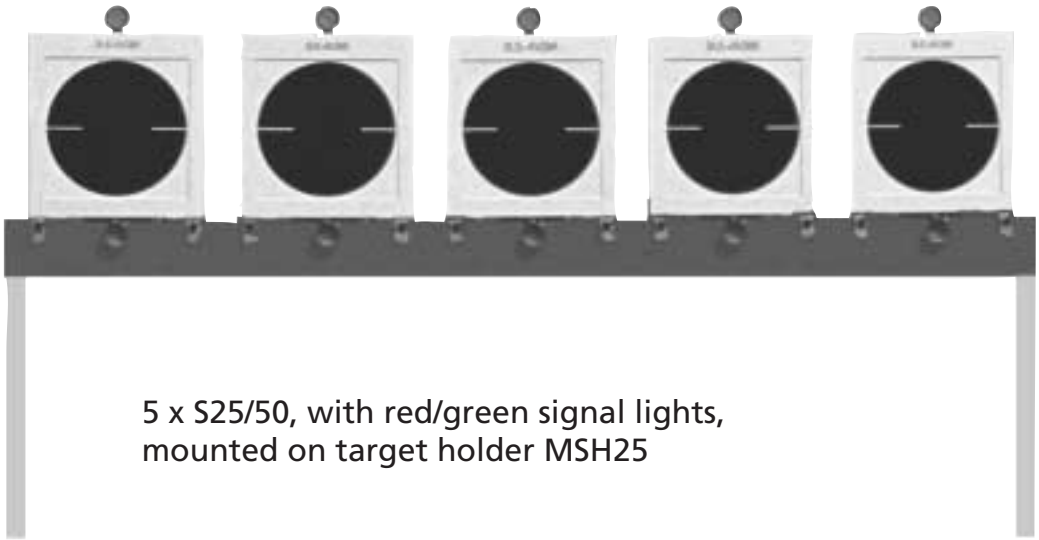
1.3.2 Assemble Target and Butt to the Wall Mounted Target Holder



1. Hole for optional target illumination BLS10
2. Wall mounted target holder plate
3. Stop screw for the mounting mandrel
4. Hole for the mounting mandrel
5. Butt
6. Mounting mandrel

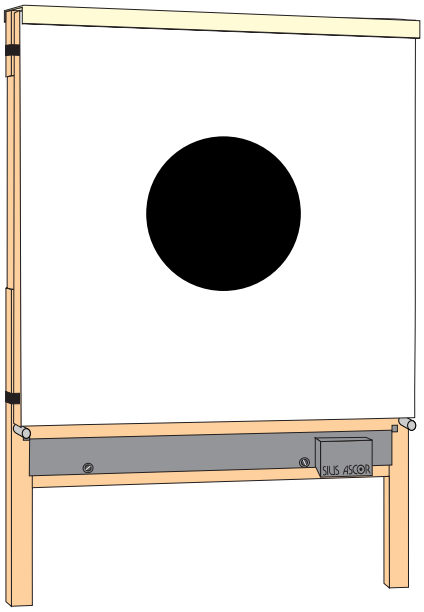
1.4 The Small Bore Rifle and Pistol Target Set S25/50-LON

S25/50-LON



5 x S25/50, with red/green signal lights,
mounted on target holder MSH25

1.5 The 300 Meter Target Set S300-LON



1.6 10 Meter Running Target Set RT10-LON

(in preparation)

2. Installation

The basic installation of a SA931 system is the same for all the disciplines and distances.

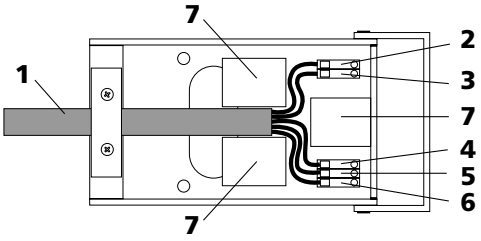
All data-bus and power supply cables with exception of the connection cable target side - shooters place are commercial twisted pair cables (RJ45).

For the connection cable target side - shooters place the cables KV020-* (up to 100m) and KV021-* (for more than 100m) are used. (* = cable length)

The KV020 cable is a 4-pole cable with two poles for the data and two for the power supply. This why only one power supply box is needed to supply the devices of the target side and the shooters place.

The KV021 cable is a 2-pole cable with two poles for the data. This why you need a second power supply box for the targets.

The cables KV020 and KV021 are connected to the distribution box of the first CU931 respectively the first target in the following way:



1.	cable	KV020	KV021
2.		white	white
3.		brown	black
4.		green	-
5.		yellow	-
6.		shield	shield
7.	plug for LON-bus cable aa203		

If the shooting range of your system is under 100m, a power supply box NT931-10 is connected on the distribution box VJ45Y, where the connection cable target side - shooters place KV020 is fixed. For a system with maximum 2 shooting lines, you can use a power supply box NT931-2. Plug in the hollow-plug directly into the the power supply socket of a CU931, see pos. 18 in chapter 1.2, page 10.

If the shooting range of your system is over 100m, a second power supply box has to be put on the target side. It has to be connected on the distribution box VJ45Y, where the connection cable target side - shooters place KV021 is fixed.

The connection of the single devices is made by aa203 cables.
Just plug them into the corresponding distribution box.
Each LON-bus has to be terminated on the last target and the last control unit with a LON-bus termination VJ45R.

Outdoor-Systems (25m,50m,300m) have the distribution boxes integrated into the target, as as they are protected from weather ionfluences.

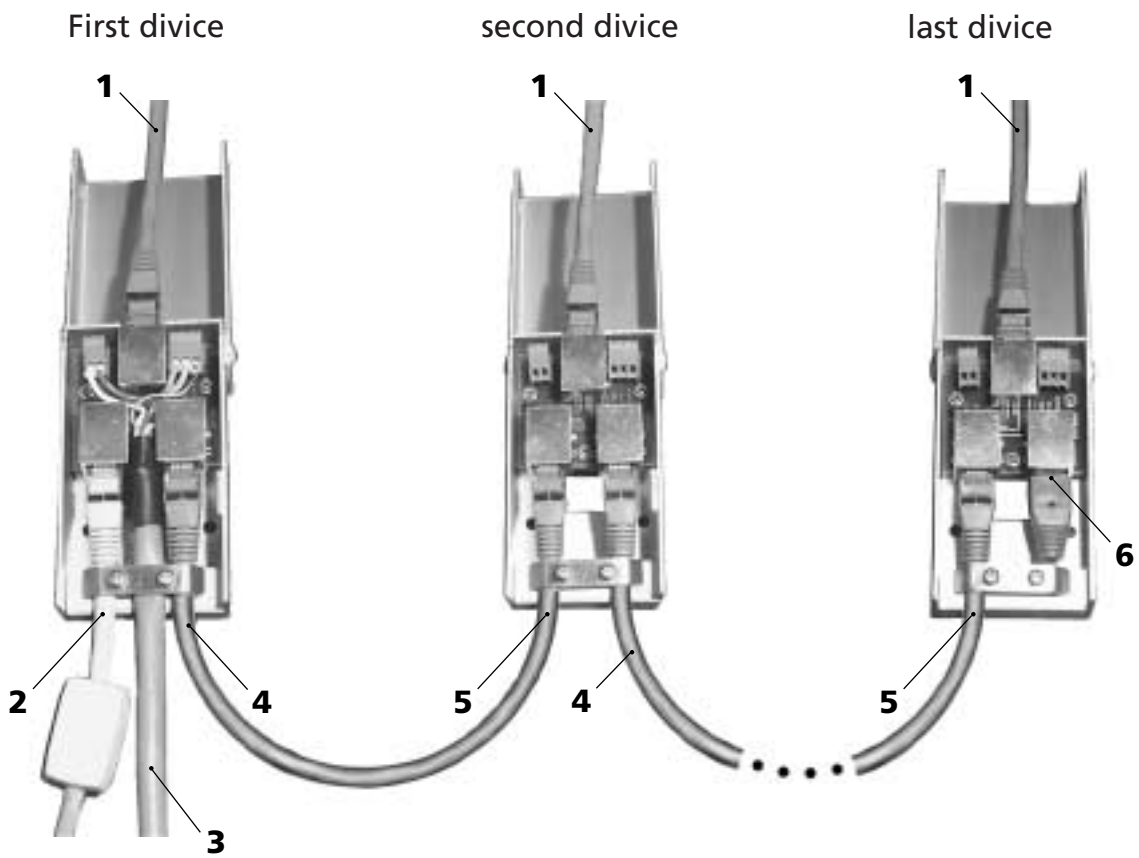
For safety and current distribution reasons, only 10 lines can be connected on one network. If you have more than 10 lines, a second network has to be installed. You can link them with a router if you want to include a measurement PC or any other device which has to be connected with the whole network.

2.1 Basic Installation

Mount the devices and targets as described in chapter 1.

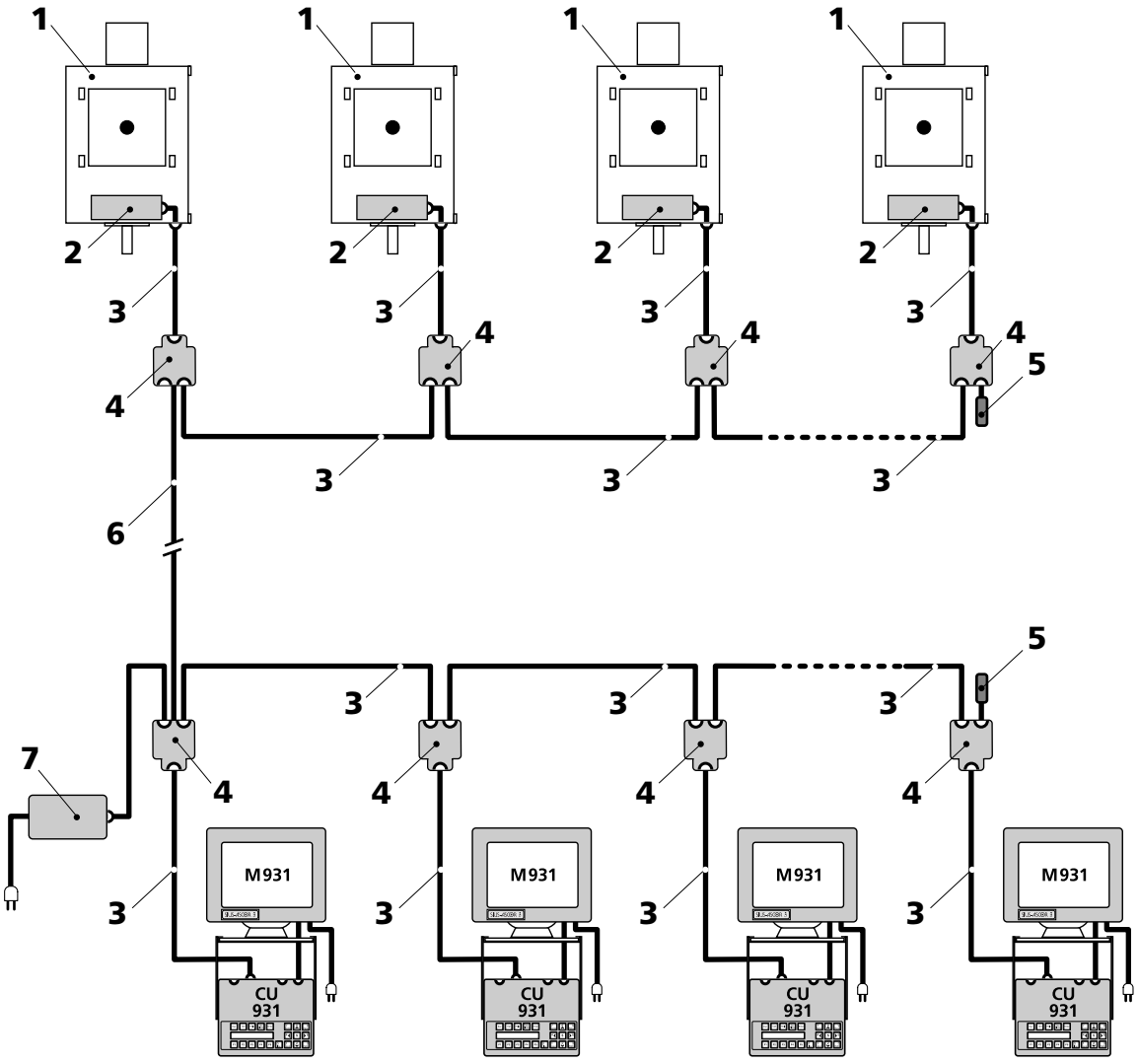
Now connect each device and target in accordance with the appropriate scheme which can be found in the chapter 2.1.1 to 2.1.4 . Pay attention to the LON-bus termination (electrical resistance VJ45R). The first use is described in chapter 3 .

How to connect the distribution box VJ45Y



1. From/to control unit/target
2. Power supply box NT931-10
3. Connection cable target side - shooters place KV020-* or KV021-* (* = cable length)
4. To the next distribution box VJ45Y
5. From the previous distribution box
6. Termination of the LON-bus VJ34R

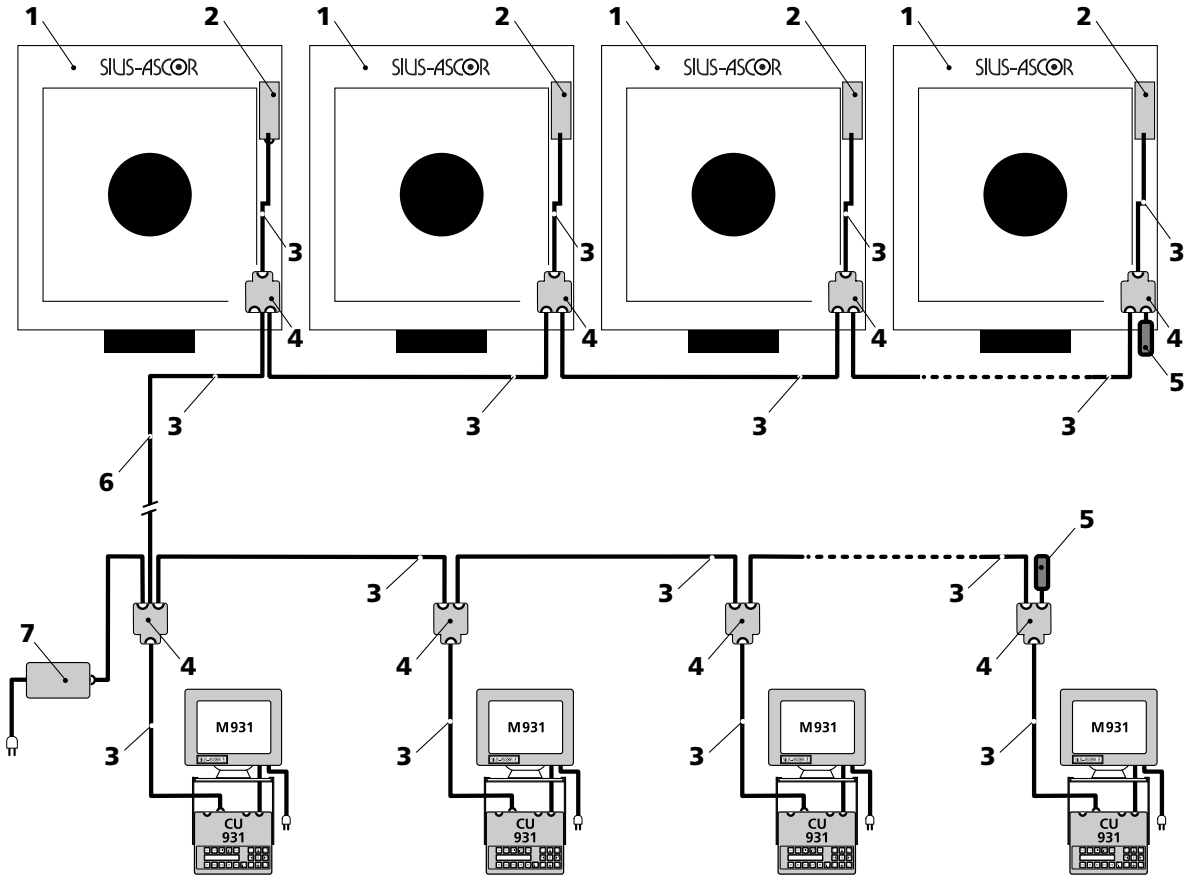
2.1.1 Installation of a 10 Meter System



1. Electronic target S10-LON (1-max.10)
2. Target electronic
3. RJ45 cable aa023
4. Distribution box VJ45Y
5. LON-bus termination VJ45R
6. Connection cable target side– shooters place KV020-*(*= cable length) (data and Power supply)
7. Power supply box NT931-10 for max. ten firing lanes, respectively NT931-2 for max. two firing lanes.

2.1.2 Installation of a 50 Meter System

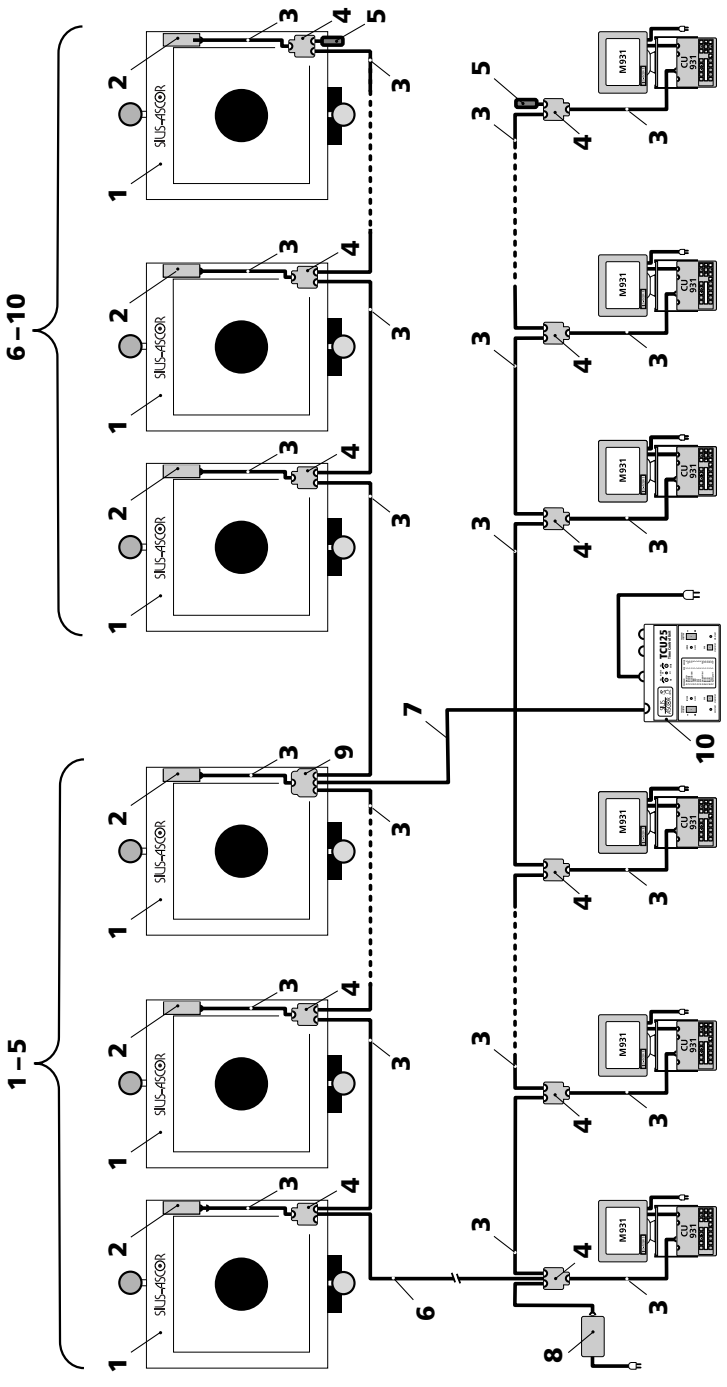
The only difference between the installation of a 10m and 50m system is the distribution boxes. In outdoor systems (25m, 50m, 300m) the distribution boxes are incorporated into the targets.



1. Electronic target S25/50-LON (1-max.10)
2. Target electronic
3. RJ45 cable aa023
4. Distribution box VJ45Y
5. LON-bus termination VJ45R
6. Connection cable target side – shooters place KV020-* (* = cable length) (data-bus and Power supply (24V DC)
7. Power supply box NT931-10 for max. ten firing lanes, respectively NT931-2 for max. two firing lanes.

2.1.3 Installation of a 25 Meter System

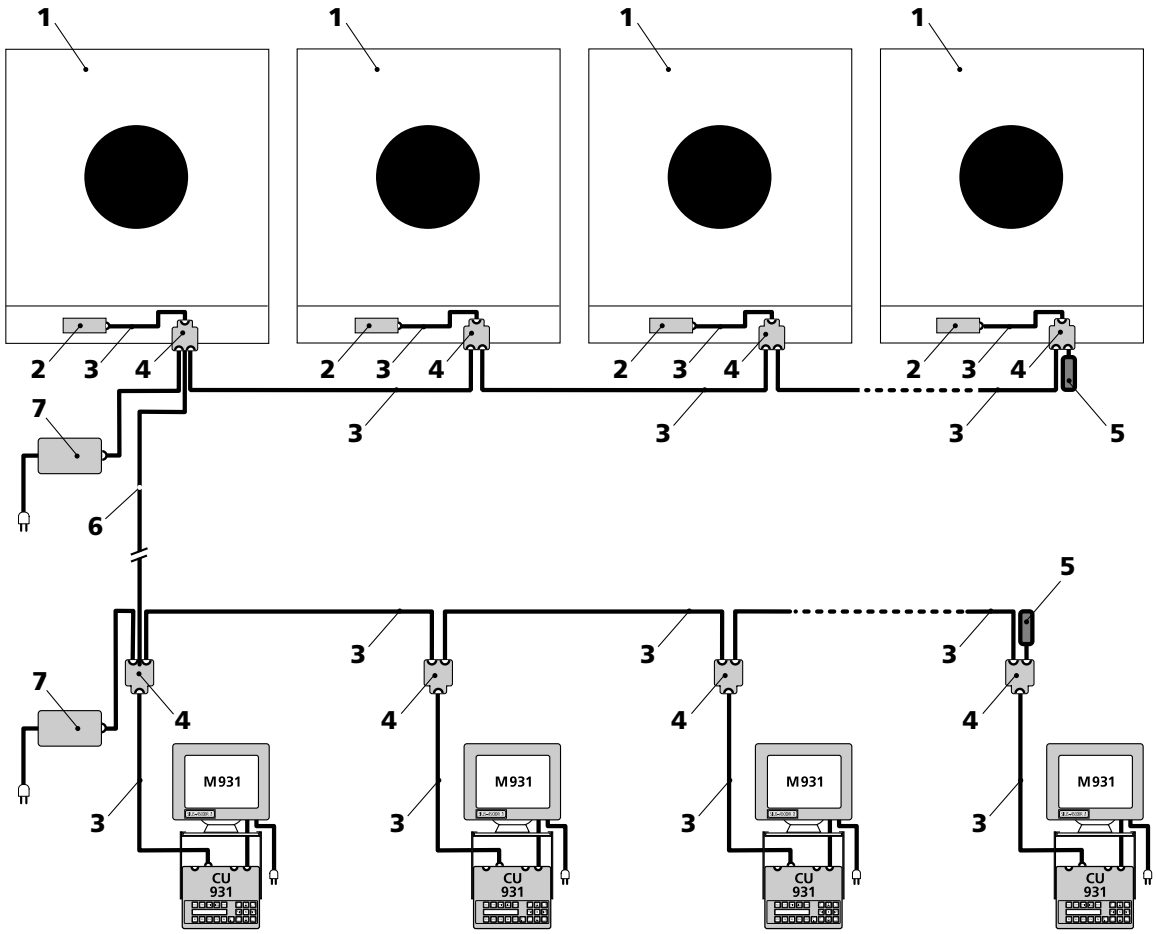
The installation of a 25m system is initially the same as the one of the 50m system. The light signals are added as on the following scheme. In target number 5, the "light signals distribution box" VJ45LS (8) has to be, instead of the conventional distribution box VJ45Y.



1. Electronic target S25/50-LON (1-max.10) with red/green signal lights
2. Target electronic
3. RJ45 cable aa023
4. Distribution box VJ45Y
5. LON-bus termination VJ45R
6. Connection cable target side–shooters place KV020-*(*= cable length) (data and Power supply)
7. Cable KT014, to connect the TCU25 to the targets
8. Power supply box NT931-10 for max. ten firing lanes, respectively NT931-2 for two firing lanes.
9. **Signal lights distribution box VJ45LS** (instead of VJ45Y)
10. Time control unit TCU25

2.1.4 Installation of a 300 Meter System

On a 300m firing lane the Connection cable target side - shooters place (pos. 6 in the drawing) has only 2 poles (only data no Power supply). The targets are electrically supplied by an additional power supply box.



1. Electronic target S300-LON (1-max.10)
2. Target electronic
3. RJ45 cable aa023
4. Distribution box VJ45Y
5. Termination of the LON-bus VJ45R
6. Connection cable target side–shooters place KV021-*(* = cable length)–(data-bus)
7. Power supply box NT931-10 for max. 10 firing lanes, respectively NT931-2 for max. two firing lanes.

3. First Use

Because all the devices are connected to a network, this network has to be configured.Each control unit and target has to have the right line number, so that each target transmits the data to the right control unit.

Once the configuration is made the system keeps it until you reconfigure it. Also if the power is cut off.

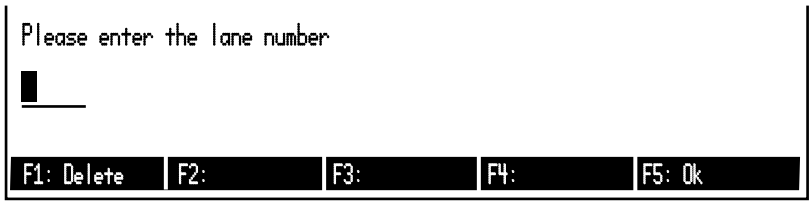
3.1 Configuration of the Network

- Mount the system as described in chapter 2.1.
- Plug in the power supply cable and turn on the monitors.

ATTENTION!

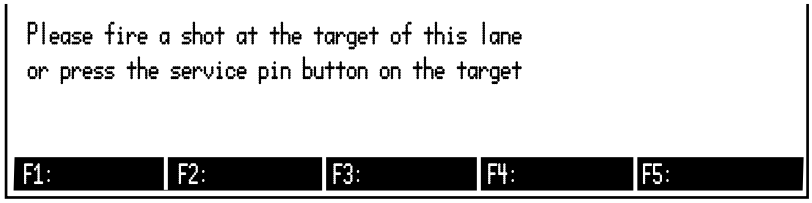
Before the configuration make sure that all devices of the network are turned on!

- Wait until the system has booted (approx. 1 min). If the system is new and not configured, shortly after the booting, you are asked by a monitor message to set the lane number:



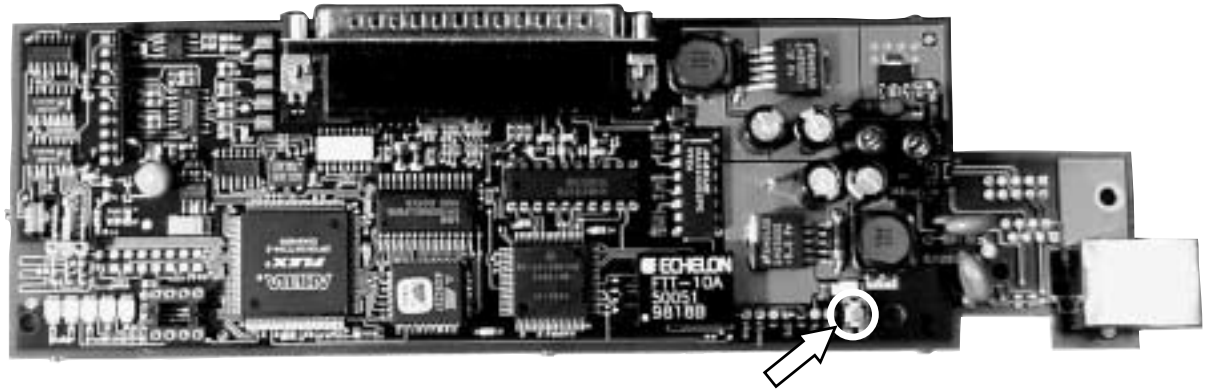
- **Start the configuration always on the most left device!**

  Now enter the desired lane number by means of the number-keys of the CU931,for example [1 End] for the first lane and then confirm this with [Enter] . The display changes to „picture 2“.

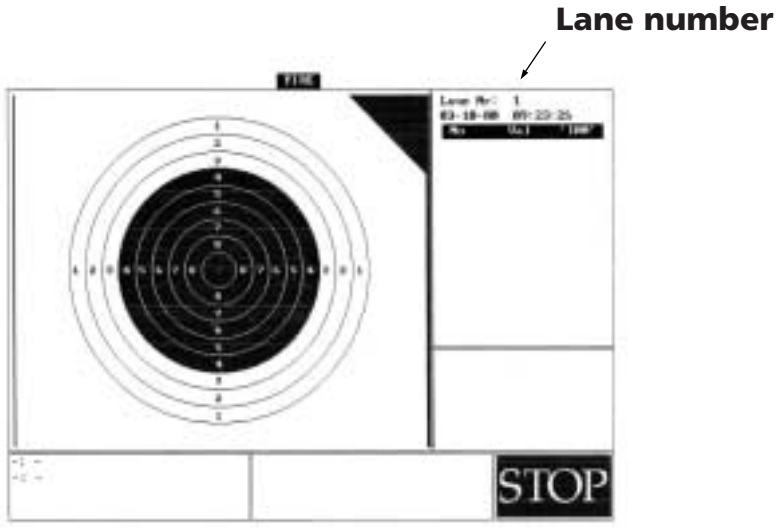


- Now shoot at the target of this lane, in our example it’s target number one, or press the target’s service-pin (see next picture on next page).

Service-pin of the targets electronic.



- As soon as the lane is configured, the control unit confirms it with a beep. The LED of the target electronic now blinks in a 1 second interval. The target and control unit are now configured, in our example they make the lane number «1».The display changes now and shows a target picture. Lane number and date are shown in the upper right corner (see picture 3). The shot made for the configuration isn't displayed.



- Configure the other lines of this network in the same way. Don’t forget: „configure always the most left unconfigured one“.

Attention! DON'T configure first all the control units and then shoot on the targets, the network WOULDN'T be configured RIGHT!

After the configuration please select the language you desire (chapter 4.3.5) and choose a range type (chapter 4.3.4, page 32)and a shooting program (chapter 4.2, page 28). Now you can start your shooting.

Attention!

If you make a mistake while configuring the system, delete the configuration of the whole network. You can do this out from one control unit (see chapter 4.4.4.3).

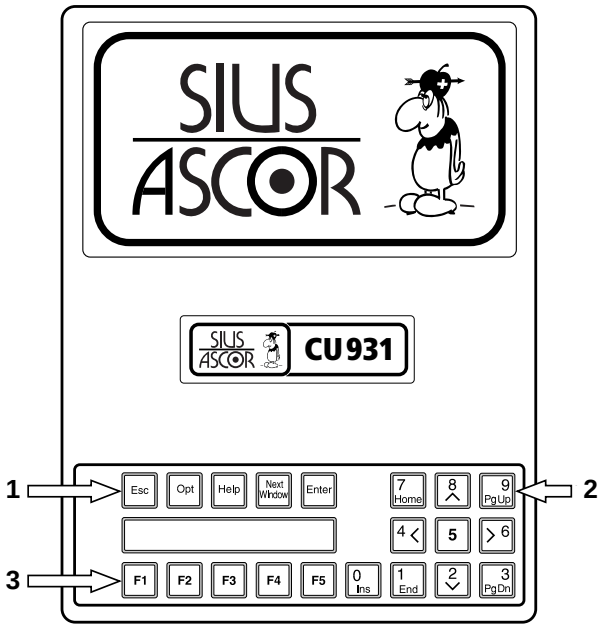
If your system is mobile, you should write the lane number on each device, it makes it a lot easier to put them up in the same order.
If for example, target number 2 is exchanged with target number 3, the Control unit number 2 receives all data shot on lane number 3 and Control unit on number 3 receives all data shot on lane 2.

4. How to use the control unit CU931

4.0 Generalities

4.0.1 The keyboard

Esc	With this key a selection is cancelled or you move to the next upper menu, without choosing any function or menu.
Help	If a window provides a help-text, it can be shown by pressing this key.
Next Window	Activates the next menu. Commands and choices from the active menu can be chosen by pressing the corresponding functionkey.
Opt	Customer specific functions
Enter	Confirms a choice. And activates the next window.

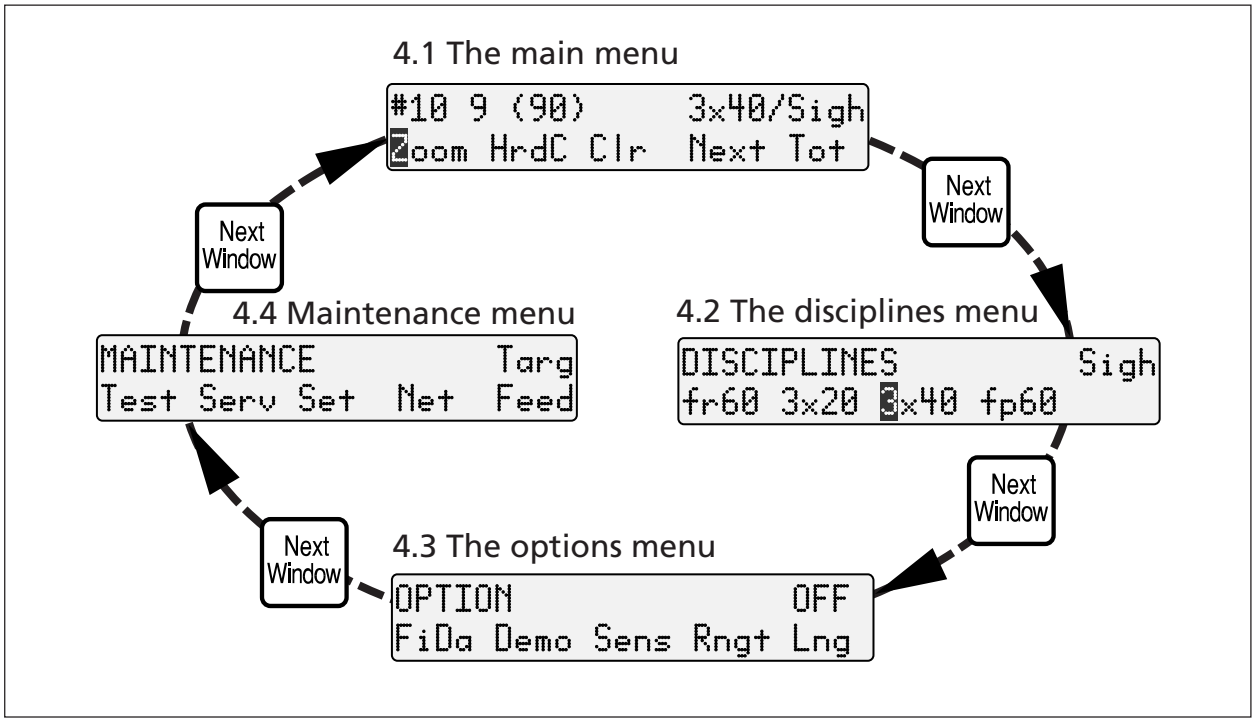


1. Keys with constant function
2. Number-block (cursor and figure functions)
3. Softkeys

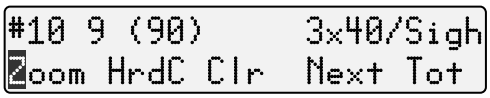
4.0.2 Menu Control

The **Next Window** button leads through the main-menu. Each confirmation activates the following menu.

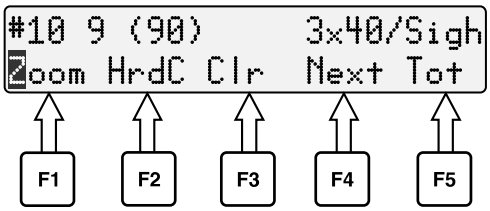
Where appropriate each menu has **submenus**, which can be activated by the corresponding functionkey. All submenus are explained hereafter.



4.1 The Main Menu



The start respectively the default menu comes up after booting (25 seconds after turning on the control unit), or after some seconds without activity.
Displayed in the top right corner is the currently set discipline (3x40 shots) and the firing mode (Sighters).
During the shooting, the shot number (#10) and the value of the last shot (9) and in tenth division of a ring (90) are shown on the upper left corner of the display.



Functions:

F1: Zoom: Zoom level

F2: HrdC: Hardcopy: Prints out what the monitor displays.

F3 Clr: Clear: Clears the shots display of the monitor.

F4: Next: Changes the presentation of the last shot into a cross. This is used in finals and for disciplines where the last shot can cover other shots if your using the biggest zoom level.

F5: Tot: Total: Terminates the shooting program, calculates, shows and prints the total.

Attention!

Make the total at the end of the shooting practice, so that the begun program stops. Otherwise all shots appear again, when you start the system the next time. All shots stay in the memory of the CU931.

When you are in the default menu press Next Window to access the **"disciplines"** menu.

4.2 The Disciplines Menu

In this menu all the disciplines are displayed of the chosen range type (see Options, „RngT“, chapter 4.3). All the displayed disciplines can be chosen by pressing the corresponding functionkey F1 to F5. In our example the range type is 50m, which has 4 disciplines only.

The cursor stays on the active discipline (in our example: 3x40).
The chosen firing mode is displayed in the upper right corner
(in our example: sighters).

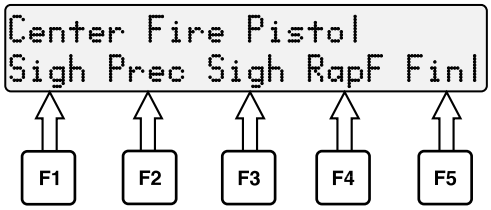
After the discipline is selected, the submenu with the choice
of the firing mode appears.

4.2.1 Firing Modes

Sigh	**= Sighting shots***	**Stg1 (2,3)**	**= Stage 1 (2,3)**
Qual	**= Qualification**	**Pron**	**= Prone**
Finl	**= Final***	**Stnd**	**= Standing**
Comp	**= Competition**	**Knee**	**= Kneeling**
Prec	**= Precision Stage**	**RapF**	**= Rapid Stage**

*** Score in tenth division evaluation**

For pistol disciplines with precision and rapid fire stage
(Centre Fire Pistol, Sport Pistol) both kinds of sighting shots can be chosen.



The corresponding stage is right to „Sigh“ (sighters):

F1 = Sighters in precision stage
F3 = Sighters in rapid fire stage
F2 and F4 are the assessed (competition) stages, F5 is the final stage

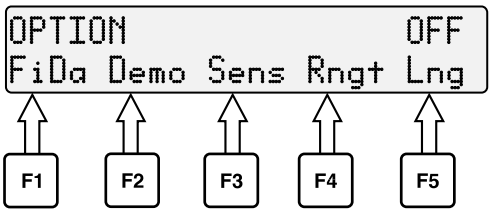
With the Esc button you return to the previous menu (Disciplines), without choosing any shooting program.

4.3 The Options Menu (opt)

In this menu additional functions and setting can be made.

The cursor stays on the last used option. With the button [> 6] and [4 <] you can move the cursor. In the upper right corner the settings of the function is displayed.

With the functionkeys F1-F5 you chose the function.



F1 FiDa Firers Data menu

F2 Demo Demonstration mode

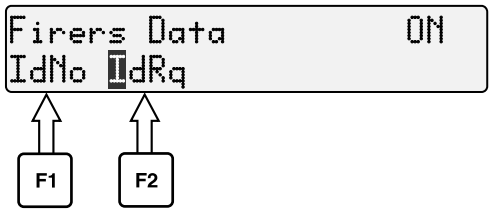
F3 Sens Shot sensor

F4 Rngt Range Typ

F5 Lng Language

4.3.1 FiDa (Firers Data) in the Options Menu

In the upper left corner the name of the submenu and in the upper right corner the settings of the function on which the cursor stays is displayed.



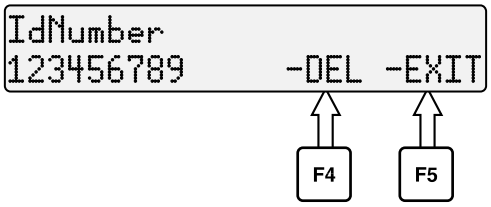
F1 IdNo Enter a shooter identification number

F2 IdRq Identification number request on/off

With the [Esc] button you can return to the previous menu, without choosing any lfunction.

4.3.1.1 IdNo (Identification Number) in the FiDa menu

With this function you can enter a shooter identification number (maximum 9 digits). For this, use the numbers keyboard.



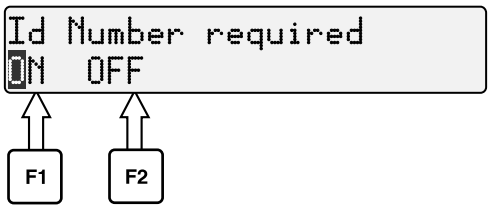
F4 DEL Delete = delete the last digit

F5 EXIT Exit = Exit the menu without changes

Confirm the right input with Enter [Enter].

4.3.1.2 IdRq (Id number Request) in the FiDa menu

In this submenu you can turn on or off the Identification number request:



F1 on You need an identification number to start a shooting program

F2 off You don't need an identification number to start a shooting program.

With the [Esc] button you can return to the previous menu, without changing the settings of the IdRq

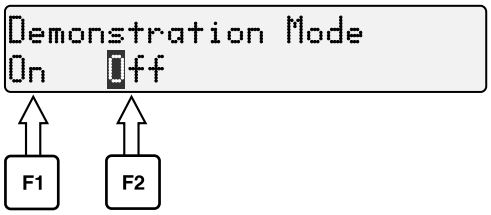
If the shooter identification number request is turned on, you have to type in the shooters identification number, otherwise lane is blocked (the status stays on STOP), as long as no IdNr is enterd. If you try to chose a new shooting program the following message appears:

Id Number Required,

please enter a shooters id!

4.3.2 Demo in the options menu

In this submenu you can turn on or off the demonstration mode.
The demo mode works only if a configured target is correctly connected to the control unit.



F1 OFF The demonstration mode is turned off

F2 ON The demonstration mode is turned on

If the demonstration mode is turned on, you can generate demo shots

by pressing [0 Ins] the value of them are generated randomly.

If in the status window on the shooter monitor (see pos.12 in chapter 3.3) **demo** is marked, then the demonstartion mode is on.

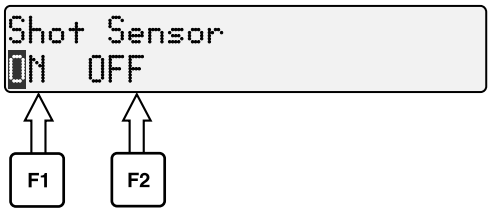
On the printout the demo shoots are marked with an exclamation mark (!).

ATTENTION!

The demo mode is for demonstration purpose only, it has to be turned off during shooting sessions.

4.3.3 Sens (Shot Sensor) in the options menu

In this submenu you can turn on or off the shot sensor



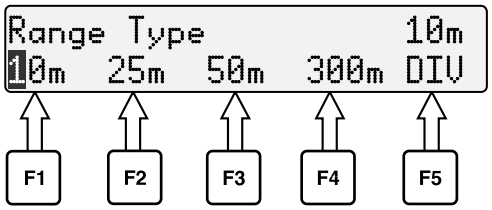
F1 ON The shot sensor is turned on

F2 OFF The shot sensor is turned off

If the shot sensor is connected and enabled, cross shots are detected and displayed on the monitor (see hidden miss chapter 4.4.3.1 and cross shoot chapter 4.6.1).

4.3.4 RngT (Range Type) in the options menu

IIn this submenu you can chose the range type .The cursor stays on the active range type (in our example: 10m).It's also displayed in the upper right corner.



F1 10m All disciplines which are shot on a 10 meter range

F2 25m All disciplines which are shot on a 25 meter range

F3 50m All disciplines which are shot on a 50 meter range

F4 300m All disciplines which are shot on a 300 meter range

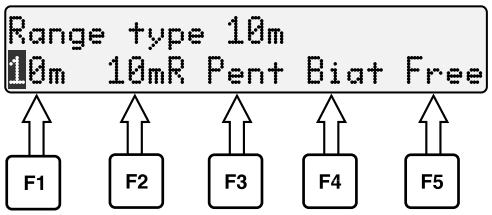
F5 DIV customer specific specialities

Each range type has one or more submenus. The corresponding disciplines are described in chapter 4.3.4.1- 4.3.4.4.

Under F5, (divers), are the customer specific specialities, they are not described furthermore.

4.3.4.1 Range type 10m

After you have chosen the range type 10m the following menu is displayed.



F1 10m 10m air weapon disciplines

F2 10mR Running target 10m disciplines

F3 Pent Pentathlon disciplines

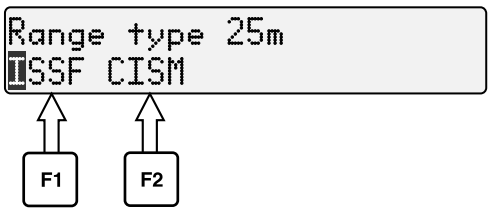
F4 Biat Biathlon disciplines

F5 Free Free shooting programs for 10m range (see, chapter 4.5)

After the choice of the category of the 10m range type all the available disciplines are displayed.

4.3.4.2 Range type 25m

After you have chosen the range type 25m the following menu is displayed:



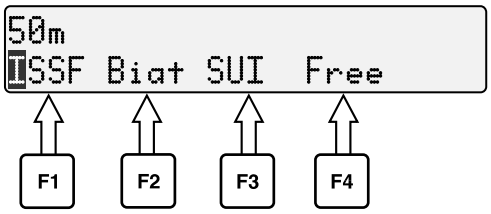
F1 ISSF All ISSF disciplines which are shot on a 25m range

F2 CISM All CISM disciplines which are shot on a 25m range

After the choice of the category of the 25m range type all the available **disciplines** are displayed.

4.3.4.3 Range type 50m

After you have chosen the range type 50m the following menu is displayed:



F1 ISSF All ISSF disciplines which are shot on a 50m range

F2 Biat Biathlon disciplines which are shot on a 50m range

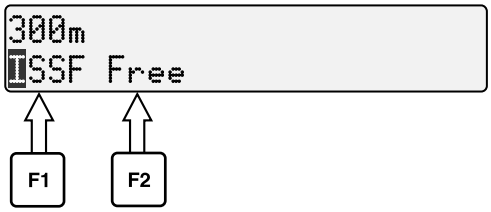
F3 SUI Swiss pistol disciplines (P4, KK and GK)

F4 Free Free shooting programs for the 50m range type (see, chapter 4.5)

After the choice of the category of the 50m range type all the available **disciplines** are displayed.

4.3.4.4 Range type 300m

After you have chosen the range type 300m the following menu is displayed:



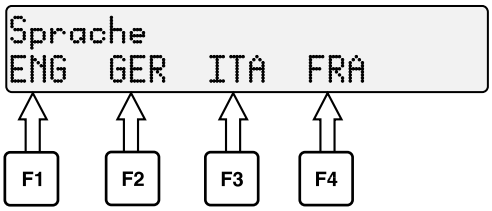
F1 ISSF All ISSF disciplines which are shot on a 300m range

F2 Free Free shooting programs on a 300m range (see, chapter 4.5)

After the choice of the category of the 300m range type all the available disciplines are displayed.

4.3.5 Lng (Language) in the options menu

In this submenu you can chose the language for the control unit and monitor display.



F1 ENG English

F2 GER German

F3 ITA Italian

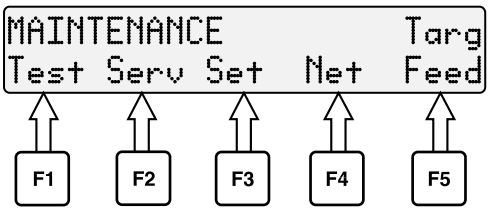
F4 FRA French

After pressing F1-F4 the language of what is displayed on the control unit and on the monitor, changes into the chosen language.

Some terms remain in English even if an other language is chosen, so that International competitions aren't disturbed.

4.4 Maintenance menu

In the maintenance menu are all the tests and service functions.



F1 Test Tests to check the system

F2 Serv Service functions

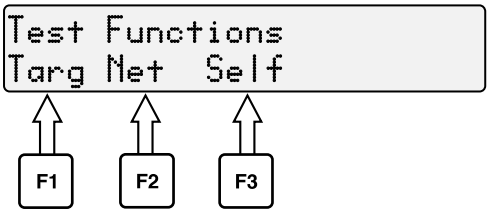
F3 Set Settings

F4 Net Network configuration

F5 Feed Manual rubber- or paper tape feed

4.4.1 Test menu in Maintenance menu

In this menu are test functions to test the system



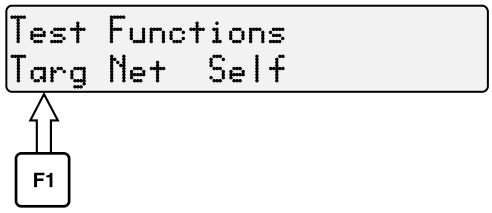
F1 Targ Target test

F2 Line Line test

F3 Self Self test

4.4.1.1 Targ (target test) in test menu

For the target test the printer has to be turned on, because the result is not displayed, but printed only.



After pressing F1 the connected target or detection system is tested and the result is printed

```
--- Testing Targets
   HIC=0000 / TIC=0001
   PIC=0004 / MIX=0000
   Input      = 0000
   Cnt Freq.  = 0000
   LON Clk    = 0000
   P=0000 / Q=0000  / D=0000
   Status=0000
   Temp=-1.00°
   Version=1.1a
```

HIC Hardware Identification Code: Hardware version of the target print.

TIC Target Identification Code: Use codes up to now:

- 0000 = Target Print without target
- 0001 = S10-LON
- 0002 = S25/50-LON
- 0003 = S25-LON
- 0004 = S100-LON
- 0005 = S300-LON
- 0006 = Deltabar 100-LON
- 0007 = Deltabar 128-LON
- 0008 = S101-LON

PIC **P**LD (Programmable Logic Device) **I**dentification **C**ode

MIX Mounting Index measurement disposition of the system

0000	=	miNormal	normal
0003	=	miRot180	Shot axe inversed
0005	=	miFlip0	Cover at the back
0007	=	miFlip180	Cover at the back and shot axe inversed

Input not used

Cnt Freq not used

LON Clk not used

P / Q / D: Are the measurement distances. They should be zero

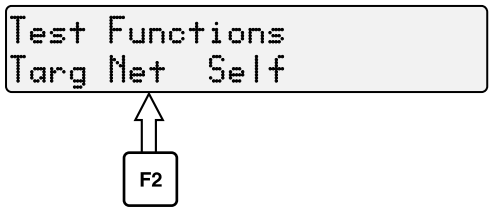
Status: Status of the counter-units. Should be zero

Temp: Temperature measured in the target

Version: Software version of the target electronic

4.4.1.2 Line (test) in test menu

For the line test the printer has to be turned on, because the results of the test are printed and not displayed.



After pressing F2 the message (**PLEASE WAIT...**) appears.
After the network is tested the result is printed.

TG Conflicts: The amount of lanes which have more than one target assigned.

TG Alone: The amount of targets which aren't assigned to any control unit

TG Total: The amount of targets which are connected to the network

ME Conflicts: The amount of lanes which have more than one control unit assigned.

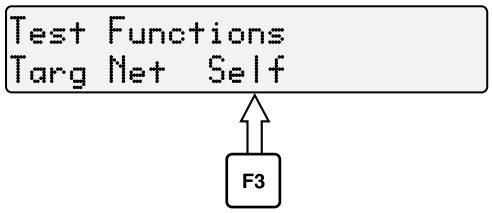
ME Alone: The amount of control units which aren't assigned to any target

TG Total: The amount of control units which are connected to the network

Unconfigured: The amount of devices which are unconfigured

4.4.1.3 Self (test) in test menu

The self test checks the control unit CU931.



After pressing F3 if the printer is turned on, the test printout is made, which means all the printable symbols are printed out.

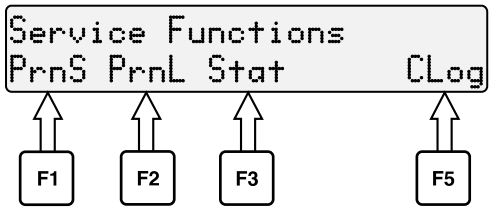
After this a separate window appeares on the monitor, which allows you to test the keyboard of the CU931.

Each key you press is displayed in this window, so press every key of the keyboard and press Esc to quit the keyboard test.

Now the display test of the CU931 starts, all the segments are activated. The display should be filled with 8s. After a few seconds the display turns back to it's normal state or you can force this by pressing Next Window .

4.4.2 Serv (Service functions) in Maintenance menu

In this menu are the service functions are in.



F1 PrnS Print screen. Makes a printout of what is displayed on the monitor (see chapter 4.4.2.1)

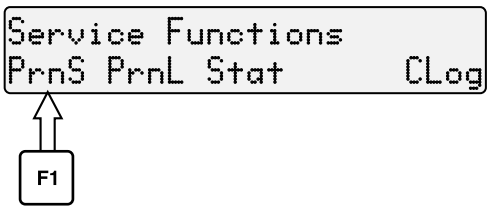
F2 PrnL Print log. Prints out the memory of the CU931 (see chapter 4.4.2.2).

F3 Stat Prints out the status of the system (see chapter 4.4.2.3)

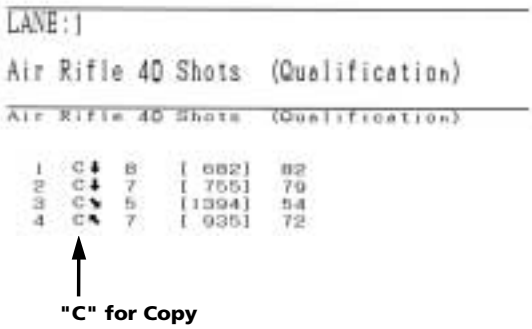
F5 CLog Clear log. Clears the log (memory of the CU931), which is irrevocable. (see chapter 4.4.2.4).

4.4.2.1 PrnS (Print Sequence function) in Maintenance menu

(not available for sighting shots)

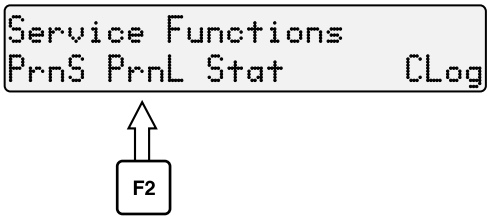


PrnS prints out the graphical representation of the last 20 shots and makes a copy of the last shooting program printout with the remark **C** for **C**opy,


LANE:1
Air Rifle 40 Shots (Qualification)
Air Rifle 40 Shots (Qualification)
1 C 8 [682] 82
2 C 7 [755] 79
3 C 5 [1394] 54
4 C 7 [935] 72
"C" for Copy

4.4.2.2 PrnL (Print log function) in Maintenance menu

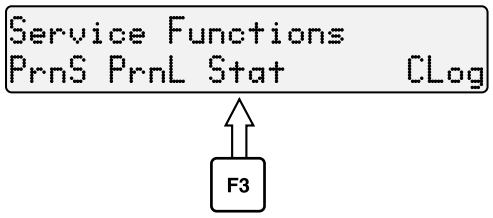
With **PrnL** the printout of the log (memory) is made:



This function is made for SIUS technicians only.

4.4.2.3 Stat (Status function) in Maintenance menu

With **Stat** the printout of the of the system status is made:



World Cup
M92 WC V6.1a software version
PLD VR: 5.17 PLD version (PLD = Programmable Logic Device of the CU931)
LON VR: 1.1a LON version
The other information are for SIUS technicians.

4.4.2.4 Clog (Clear Log function) in Maintenance menu:

Clear log. Clears the entire log (memory of the CU931),

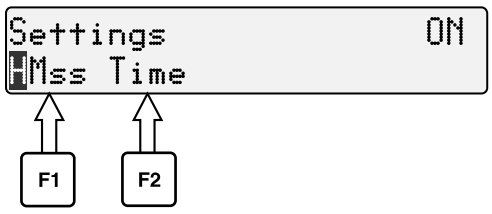
Attention!

This is irrevocable.

4.4.3 Settings menu (set) in Maintenance menu

In the settings menu you can change the date the time and (de)activate the hidden miss function (HMss).The cursor remains on the last activated setting

(in our example: HMss).With the buttons [>6] and [4<] the cursor position can be moved. The state of the setting, which is marked with the cursor, is displayed in the upper right orner (in our example: for HMss):



F1 HMss Hidden miss ON/OFF (see chapter 4.4.3.1)

F2 Time To set the time and the date (see chapter 4.4.3.2)

4.4.3.1 HMss (hidden miss) function in set menu

In the **HMss** submenu you can set the hidden miss function ON or OFF
(You can use his function only if your using a shot sensor)

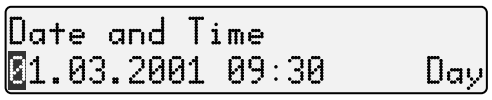
F1 ON To set the hidden miss function ON

F1 OFF To set the hidden miss function OFF

If the HMss function is set on, a shot that hits the target but who wasn't detected by the shot sensor is put in the log (memory) but isn't counted as a zero.

4.4.3.2 Time function (set time) in set menu

With the time function you can set the actual time and date.
The time setting has do be done on one CU931 only, all the other devices on the same network are set automatically.
After the Time function has been chosen, the following display is shown:



The cursor is placed on the first digit of the date, which is the day. Please enter the actual date, useing the number keys. In our example 01032001 for the first March 2001.Now enter the actual time. In our example 0930 for 9.30 am.

If you have made any mistake continue by pressing any number key.When you have moved the twelve digits the cursor jumps back automaticaly to the first digit. Now you set the right date and time.

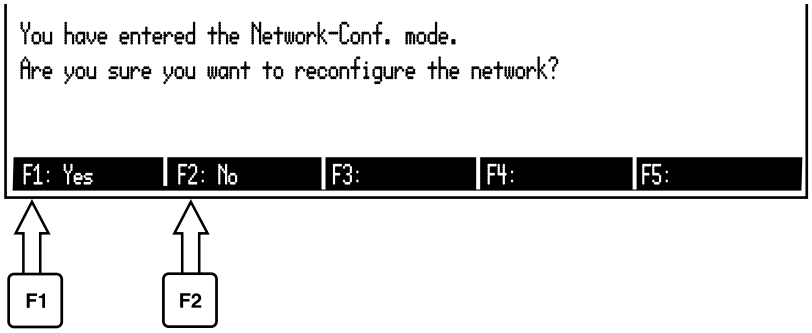
Confirm the entry with Enter.

4.4.4 Net (Network menu) in Maintenance menu

ATTENTION!

Please ensure that all devices are connected to the network, pluged in and turned on!

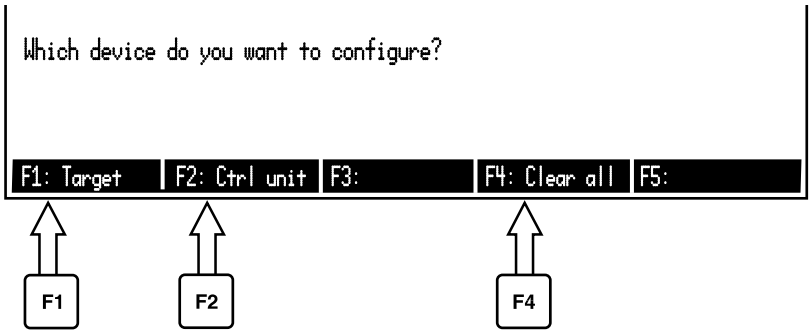
As soon as you have pressed F4 to enter the net(work) menu, the following menu is displayed on the monitor, not on the CU931:



F1 Yes Confirm the reconfiguration of the network

F2 No Cancel the reconfiguration of the network

As soon as you have pressed F1, the following menu is displayed on the monitor:



F1 Target reconfigure the target (see chapter 4.4.4.1).

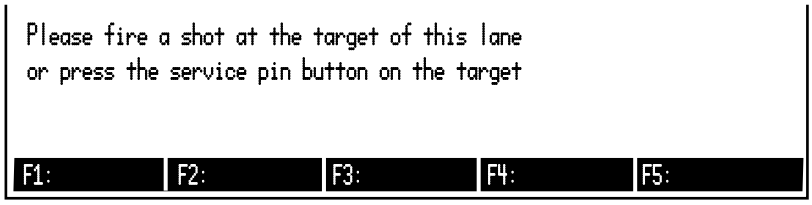
F2 Ctrl unit reconfigure the control unit (see chapter 4.4.4.2).

F4 Clear all (delete the network configuration of all devices of the network (see chapter 4.4.4.3).

With Esc you can abort the network configuration menu, without changing the network configuration.

4.4.4.1 Target (settings) in Net(work) menu

To configure the target, press F1. The monitor displays now the following message:



If the target is unconfigured (the LED blinks in a 1-second interval), you can shoot on the target or press the target's service pin.

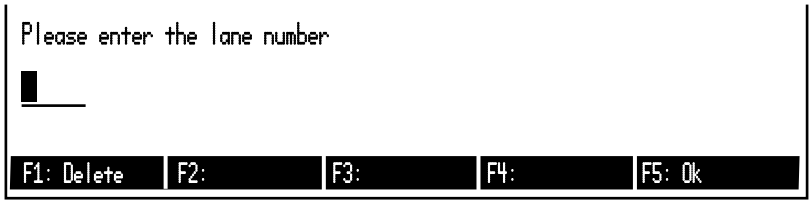
The successful configuration is confirmed by a beep of the control unit and the monitor displays the target again.

4.4.4.2 Ctrl unit (control unit settings) in Net menu

Attention!

Please make sure that all devices are connected to the network, pluged in and turned on!

To configure the control unit, press F2. The monitor displays now the following message:

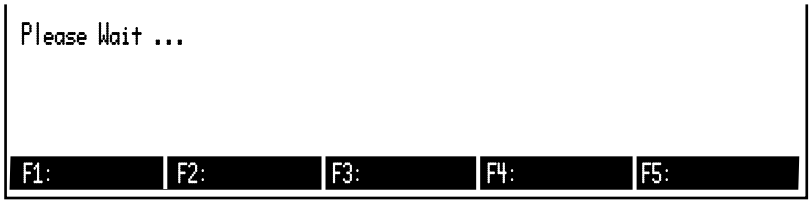


Please enter the lane number, useing the number keys 0 Ins – 9 PgUp.

By pressing F1 you can delete the last digit.

Having confirm the correct input with Enter,
wait until the configuration is done.

As soon as you have entred the lane number and confirmed with Enter, you are pleased to wait until the configuration is done.



The successful configuration is confirmed by a beep of the control unit and the monitor displays now the target again.

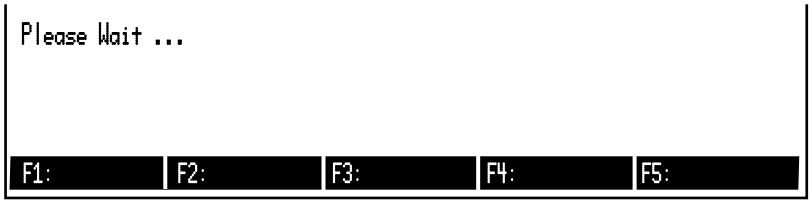
4.4.4.3 Clear all in Net menu

Delete the configurations of all devices of the network.

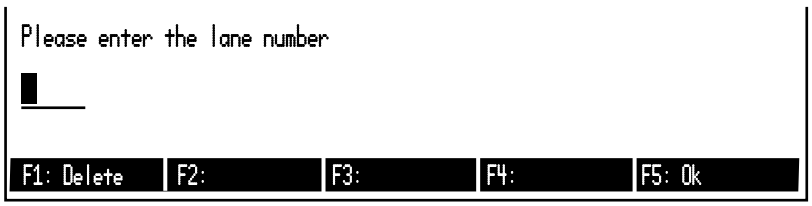
Attention!

Please make sure that all devices are connected to the network, pluged in and turned on!

If you want to delete the configuration of all devices of the network, press F4.
The monitor displays now the following message:



As soon as the message: „Please enter lane number" appears, the configurations of all devices of the network are removed.



Before you enter the lane number turn of all control units, wait one minute and turn them on again.

After the booting, all the devices are in configuration mode.
Configure the network as described in chapter 3.1.

4.4.5 Feed in the Maintenance menu

This function makes a manual rubber- or paper tape feed.

By pressing F5 (Feed) the target makes a manual rubber- or paper tape feed.

The manual feed has the length of about 5cm for a S10-LON and 20mm for a S25/ 50-LON target.

The settings of the tape feed are factory settings.
During the shooting the feed is made automatically, depending on the discipline. The automatic feed is surveyed by the target and if it isn't made or not made correctly, the monitor displays: „ERROR! ‚No feed, on target!

Press Esc to remove this message.

4.5 Free shooting programs

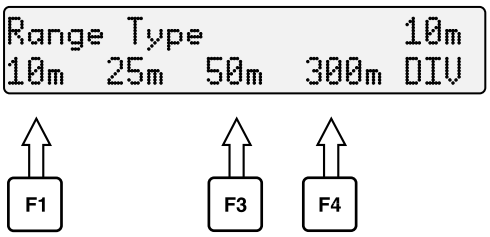
If free shooting program is selected, you can combine sighting shots, single shots and recall function, to set up your own shooting program.

You can also generate subtotals, intermediate totals and global totals.

Free shooting programs can be made for the following rang types:
10m,50m, 300m.

4.5.1 HoW to get to the Free shooting programs

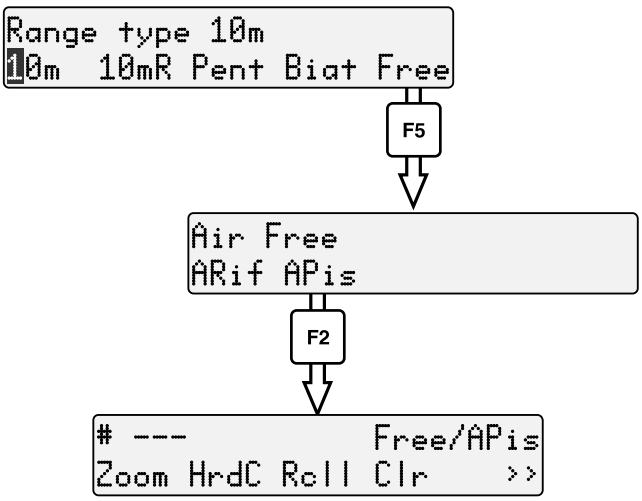
When you are in the default menu, press twice [Next Window] to access the options menu. Then press [F4] to select the range type men



Chose the desired range type with [F1], [F3] or [F4], for example [F1] for the 10m range type. Now all the 10m range type disciplines are displayed.

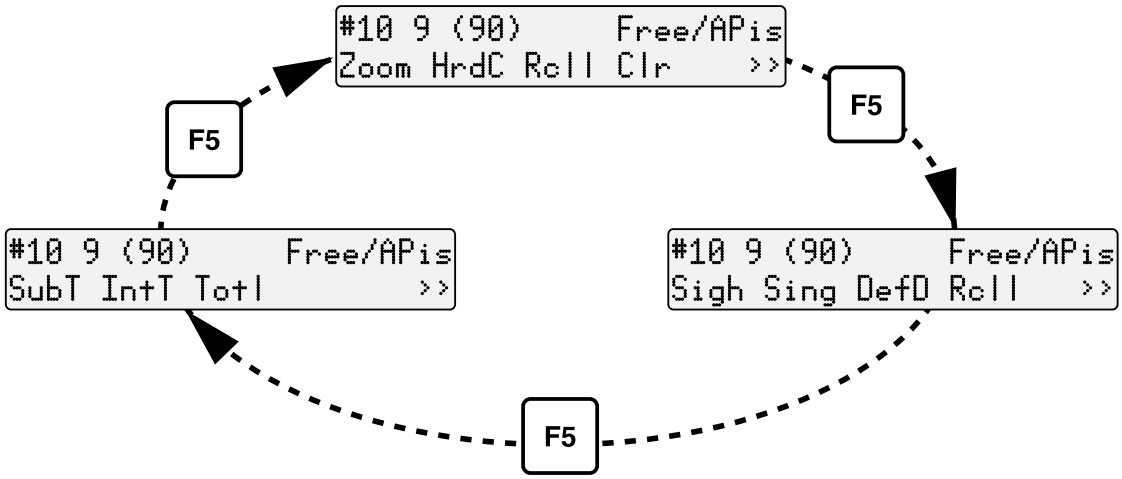
Chose "Free", here with [F5], to access the free shooting program menu.

Now you have the choice between rifle or pistol (for rang type 300m there is obviously no choice), here for example press [F2] for "APis".



Now the free shooting program menu is active. The default firing mode is sighters. After about 25 seconds the display changes to show the main free shooting program menu (same as for the mainprogram to change into the default menu).

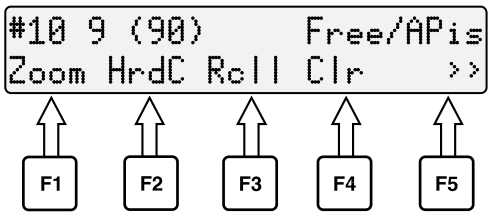
The main free shooting program menu is made of three windows, you can move to the next one by pressing F5:



You can return to the main program default menu, by pressing twice Next Window to get to the options menu. Press F4 for range type and select the discipline and the firing mode you want.

4.5.2 Main menu of free shooting programs

The main free shooting program menu is very similar to the main shooting program menu.



F1 Zoom Zoom level.

F2 HrdC Hardcopy,Prints out what the monitor displays.

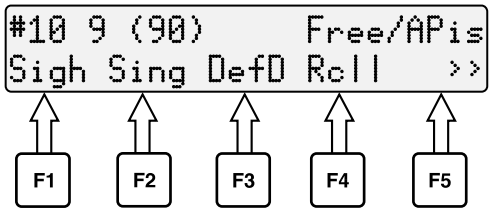
F3 Rcall Recall function, doesn't display the value of the fired shots until you press Rcall.

F4 Clr Clear, clears the shots displayed on the monitor.

F5 >> Next window, leads to the next window in the main free shooting program menu.

4.5.3 Firing modes for the free shooting programs

Firing modes for free shooting programs



F1 Sigh Sighter (sighting shots) are displayed on the monitor, but no total is calculated for them. Sighters can only be activated after the start or after a total, but not during a counting shot group.

F2 Sngl Single shot, shots are displayed as soon as detected.

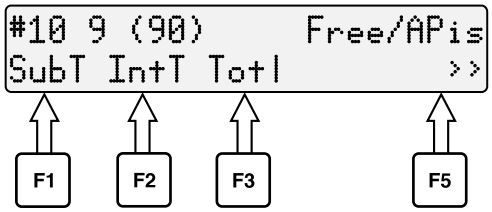
F3 DefD Defered display, shots are displayed as soon as you press Rcall.

F4 Rcll Recall, displays the shots when you are in DefD mode (all shots since the last time you activated Rcall or since the beginning of the DefD mode).

F5 >> Next window, leads to the next window in the main free shooting program menu.

4.5.4 The totals menu for free shooting programs

In this menu you can make different kind of totals:



F1 SubT Subtotal, it's the total of the shot group. All shots since the last subtotal respectively since the beginning of the shooting program are added together and a new shot group is generated.

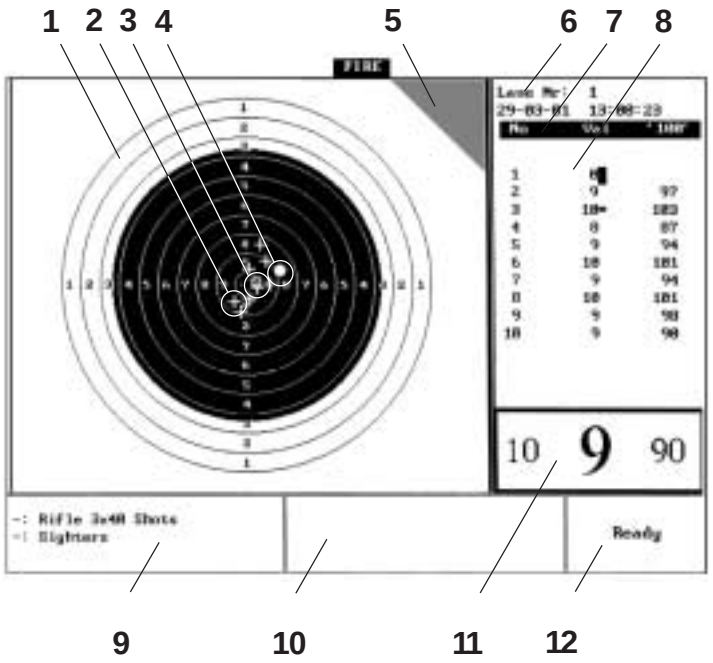
F2 IntT Intermediate total, makes a subtotal and a intermediate total from all shots since the start or the last intermediate total.

F3 Totl Global total, makes a subtotal and a intermediate total, the global total and terminates the shooting program.

F5 >> Next window, leads to the next window in the main free shooting program menu.

4.6 How the screen is displayed

An example of the 50m, 3x40 shot shooting program
(after 10 shots).



1. **Target**, representation according to discipline and zoom stage.
2. **Hit**, Representation of where a previous shot hit the target
3. **MPI**, Mean Point of Impact
4. **Last Shot**, representation of where the last shot hit the target.The circle represents the diameter of the projectile, depending on the zoom stage.
5. If you are shooting **sighters** (sighting shots) the upper right corner of the target is shown reverse.
6. **Lane number, date** and **time** are displayed here (see chapter 2.2.1)
7. **Header** of the results table

   No: Shot number

   Val: Shot value in complete rings and tenth division of rings
8. Results table (last ten shots)
   Inner ten's are show with an asterisk „*" (see shot number 3)
   Frame hits are shown with „▯" (see shot number 1)

9. **Current shooting program**
10. **Totals and MPI**
    MPI = mean point of impact of the last group of shots
    (deviation in mm from the centre of the target)

    Totals
    1st total = total of the current group of 10 shots
    2nd total = total of the current shooting program
11. **Last shot**, the result is the large number
12. **Status field**

    Ready: system is ready
    Stop: system is not ready
    OFFLINE: no connection to the target
    Demo: demonstration mode is switched on

4.6.1 Cross shot indication

If you use a shot sensor, the system does detect shots fired from a different lane (cross shot). Cross shots are displayed with this symbol.

This symbol is displayed just under the results table if the system detects a cross shot.

The cross shot symbol remains displayed for approximately 7.5 minutes then disappears automatically (if no other cross shot was made).

The control unit of the shooter firing the cross shot considers the shot as a fired and scores it as a „0“. The lane receiving the cross shot does not score the cross shot,but writes it into the log. To print out the log see chapter 3.2.6 (PrnL).

4.6.2 Screen saver

The SA931 system has an automatic screen saver incorporated.

If there is no activity on a lane (shot fired or control unit manipulation) for 15 min, the screen saver starts automatically (the SIUS chap walks around...).

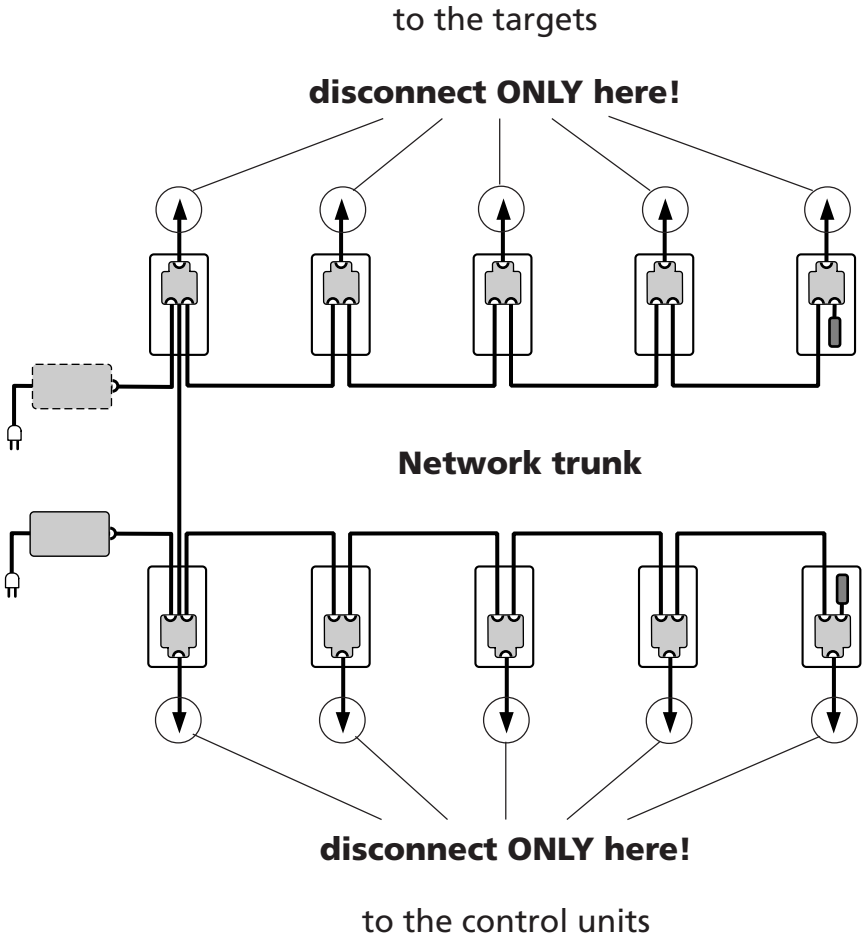
The screen changes automatically back to the activated mode if any shot is fired or any manipulation on the control unit is made.

5. How to exchange devices of the network

To exchange of devices there are three basic rules, which have to be considered:

1. Always start exchang and configuration on the leftmost device.
2. Always exchange only one device at a time!
3 Unplug every device at the distribution box, without disconecting the distribution box from the network trunk.

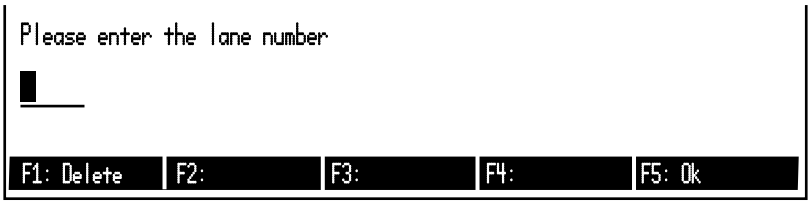
If you handle disaccording to these basic rules, the network configuration can get mixed up. If this happens all the devices of the network have to be reconfigured. For this see chapter 2.2.2.



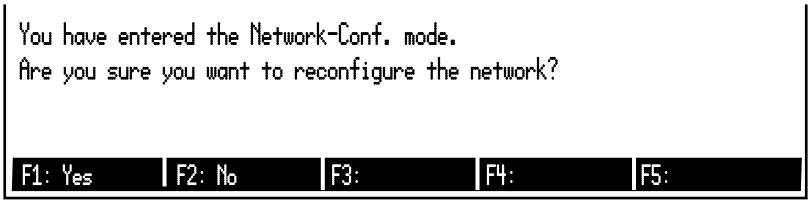
5.1 Exchange a CU931 (Control Unit)

Do it like this:

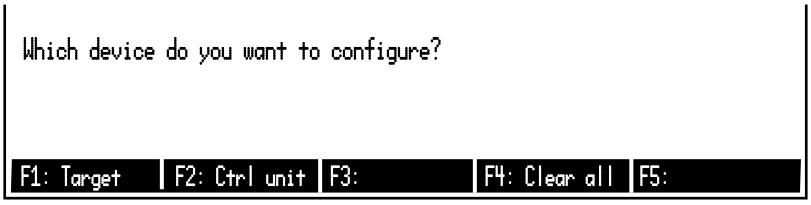
1. Disconnect all plugs reaching the CU931:
2. Exchange the CU931
3. Connect all plug you disconnected before
4. If the monitor displays: „**Please enter the lane number**“, after the booting, you have a unconfigured control unit and can proceed with point number 9.



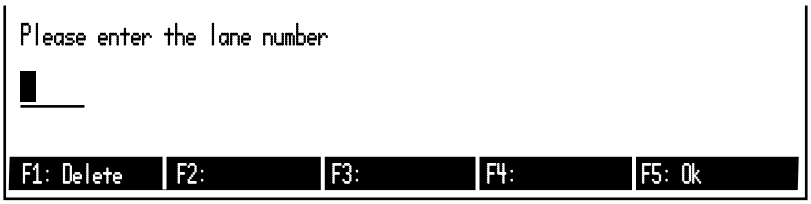
5. If your control unit was once configured you have to reconfigure it.
   For this press three times [Next Window], to access the maintenance menu.
6. Press [F4] „**Net**“. Now the monitor displays the following menu:



7. Press [F1] „**Yes**“.Now the monitor displays the following menu:



8. Press [F2] „**Ctrl unit**“. Now the monitor displays the following menu:



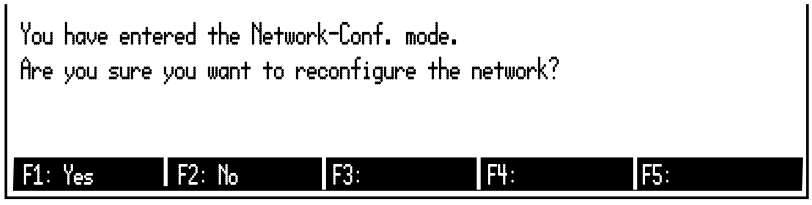
9. Please enter the lane number, for this use the number keys [0 Ins] – [9 PgUp].
   By pressing [F1] you can delete the last digit.
10. Confirm the entry with [Enter].

Attention: NEVER exchange more than ONE CU931 at a time!

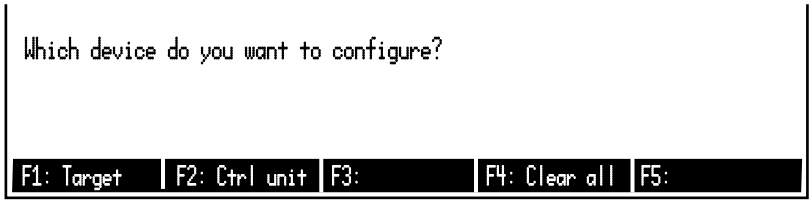
5.2 Exchange a target:

Do it like this:

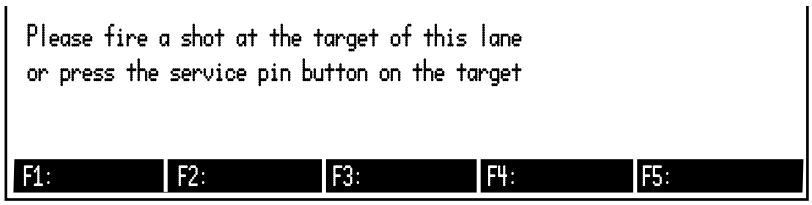
1. On the control unit where you want to exchange the target, go into the „**maintenance**" menu, for this press three times [Next Window].
2. Press [F4] „**Net**". Now the monitor displays the following menu:



3. Press [F1] „**Yes**". Now the monitor displays the following menu:

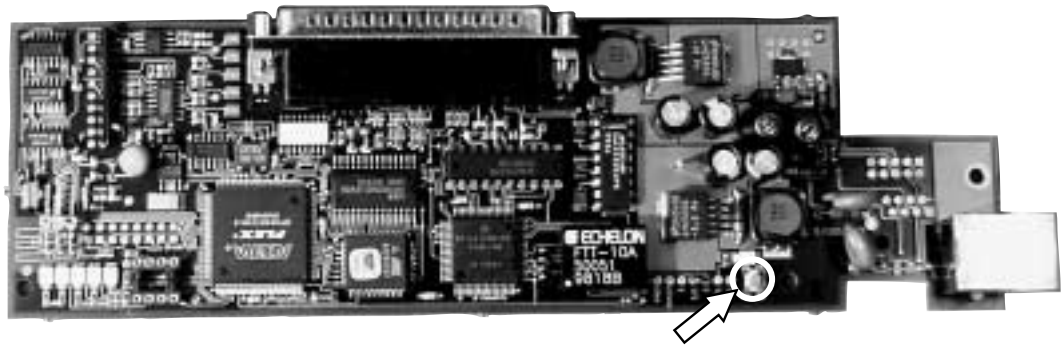


4. Press [F1] „**Target**". Now the monitor displays the following menu:



5. Plug off the corresponding target, without interrupting the network trunk, see picture on page 52.
6. Exchange the target
7. Plug in the LON-bus

8. Open the target
9. Please fire a shot at the target of this lane,
   or press the service pin on the target



10. Close the target
11. If the monitor displays: „**ERROR!,No feed,on target!,(press escape)**“,
    then press [Esc] to make this message diapear.

    Attention: Never exchange more than one target at the time!

6. Troubleshooting

6.1 General troubleshooting

- **To reset the settings of the CU931 back to factory settings:**

  Turn off (disconnect) the power supply so as no device of the shooters place is under current. Plug in again and while „Bootstrap loader“ is displayed on the LCD of the CU931, press the mode button (see chapter 1.2 pos. 16 on page 10) until the message: please release the coldstart button“ apears.

- **If the network configuration is mixed up:**

  Delete the network configuration of all devices connected to the network (see chapter 4.4.4.3) and reconfigure all devices (see chapter 3.1).

  Attention: Configure always the leftmost unconfigured device!

- **If the monitor doesn’t react anymore while configuring the network settings of a target:**

  Please ensure that all plugs and cables aren't damaged. Check that the cables are connected corresponding to the installation scheme. Check that the plugs are connected properly.

  Configure the target as described in chapter 5.2 (exchange a target)

- **If no shots are displayed on the monitor:**

  1.If the status field on the monitor (chapter 4.6 pos. 12 on page 51) displays stop: No shooting program has been loaded (see chapter 4.2, Disciplines on page 28)

  2.If the status field on the monitor (chapter 4.6 pos. 12 on page 51) displays offline:The target attributed to the control unit is not connected or wrong configured.
  Please ensure that all Plugs and cables are intact. Check that the cables are connected corresponding to the installation scheme.
  Check that the plugs are connected properly.
  If necessary configure the target as described in chapter 5.2 on page 54 (exchange a target)

  3. Check that the target electronic print (LME) is pluged in correctly and mechanically fixed.

- **If the shots are displayed on the wrong monitor (lane):**

  The network configuration is wrong! Delete the network configuration of all devices (see chapter 4.4.4.3 on page 45) and reconfigure them (see chapter 3.1 page 22).

- **If it isn't possible to load a shooting program (discipline):**

  1. If the status field on the monitor (chapter 4.6 pos. 12 on page 51) displays **Offline**: The target attributed to the control unit is not connected or wrong configured.
  Please ensure that all Plugs and cables are intact. Check that the cables are connected corresponding to the installation scheme.
  Check that the plugs are connected properly. If necessary configure the target as described in chapter 5.2 (exchange a target)

  2. The monitor displays the prompt: **„Id Number Required,Please enter a shooters id!"**

  In this case the **IdRq** (Identification Request) function is **on**.
  You can enter a shooter identification number (see chapter 4.3.1.1) or turn off the IdRq (see chapter 4.3.1.2 on page 36). Then select a new shooting program (discipline chapter 4.2 on page 28).

- **If the target doesn't make the automatic tape feed:**

  Please ensure that the target still has some paper or rubber on the roll and that the tape isn't blocked by bullet splitters, "fractions of the projectile spread protection" or by anything else. The cover of the target has to be closed.

  Then press Esc, until all the „ERROR!,No feed on target!,(press escape)" messages are disappeared (For each feed-error one message).

- **If the monitor displays all the time the cross shot sign (see chapter 4.6.1)**

  1. If a shot sensor is connected:
     - A cross shot has been made (the sign stays for 7.5 minutes)
     - If no cross shot has been made, make sure that no objects are covering the shot sensor and check that the weapon is in right position to the shot sensor (see specifications of the shot sensor).

  2. If no shot sensor is connected.

  The shot sensor is turned on in the sens menu (see chapter 4.3.3 on page 31), please turn it off.

- **If on the printout or on the monitor the time or date is wrong:**

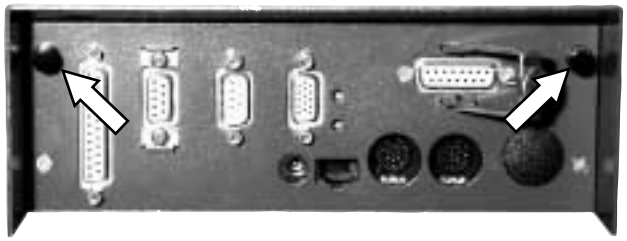
Set the date and time with the time function (see chapter 4.4.3.2 on page 42).

- **If the monitor loses the date after each booting (turning on):**

  The battery of the control unit CU931 is empty. Exchange the battery or send the control unit to the next service-centre.

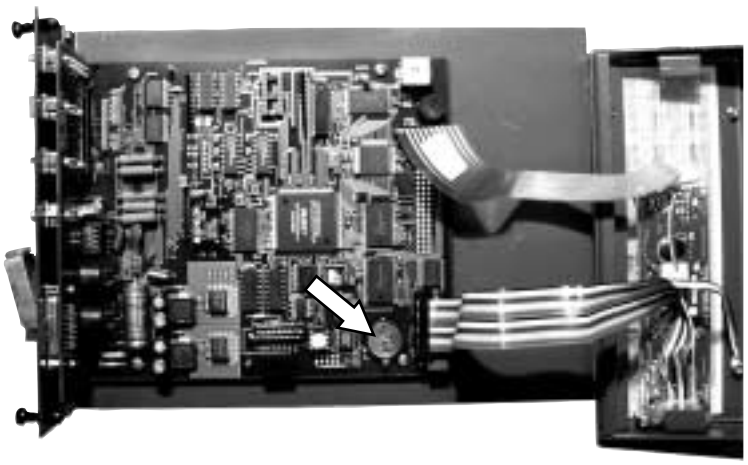
How to exchange the battery:

1. Disconnect all plugs from the CU931.
2. Open the device, by pulling out the two Nylatch looking-pins (see picture)



The rear plate of the CU931 with all it's sockets and it's electronic print can now be taken out of the box. Take care, because the keyboard is still connected to the print with a flat-band cable (see picture).

3. Turn over the box, to have full access to the electronic print.



4. Take out the battery, useing a small screwdriver.
5. Put in the new battery, the plus pole is on the top.
6. Close the device
7. Connect all the plugs
8. Set the time and the date as described in chapter 4.4.3.2.

Attention: use only CR1620 3V batteries!

SIUS article number: aa127

6.2 Exchange fuses

6.2.1 General

Attention!

Before you open a device, disconnect the power supply plug!

Attention!

Before exchanging any fuses please check the condition of the devices and cables and repair or exchange damaged parts!

6.2.2 Dimension of the fuses:

device	number	dimension	type and size
NT931-10	1	5 x 20mm	4A fast
CU931	1	5 x 20mm	2A slow
TCU25	3	6.3 x 32mm	6.3A slow

7. Accessories

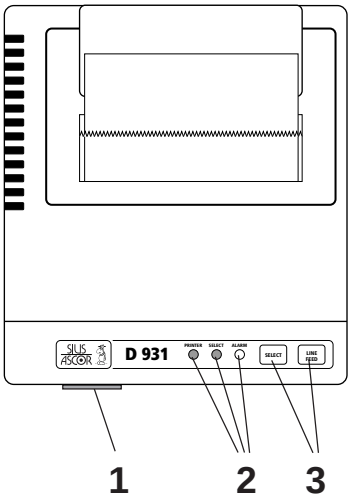
7.1 Printer D931

The optional thermo printer D931 is capable of making graphical presentations.

Connect the printer to the control unit CU931, see chapter 1.2 on page 10.

The printer prints out the shot results table and if desired the current content of the monitor ("F2" button in chapter 4.1 on page 27.) and the results of test functions (see chapter 4.4.1).

To turn the printer on and of use the main switch situated on the front side of the printer see position 13 on next page!



1. Main switch of printer D931
2. Control lights:

   POWER: Device is switched on, this light is on when printer is on.
   SEL: Selection, this light is on when printer is on.
   ALM: Alarm, this light is on if the printer has no paper or if the locking lever is in the open position.

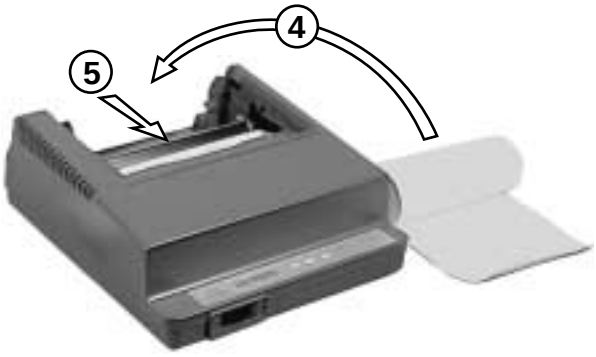
3. Keys:

   SEL: Selection, switch off for paper feed (LineFeed). Has to be on for printing.
   LF: Line feed, only possible if selection is off.

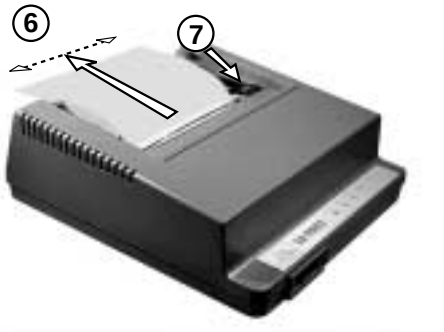
7.1.1 Exchange of the paper roll (article number aag048)

1. Hold the cover at the back and lift it up.

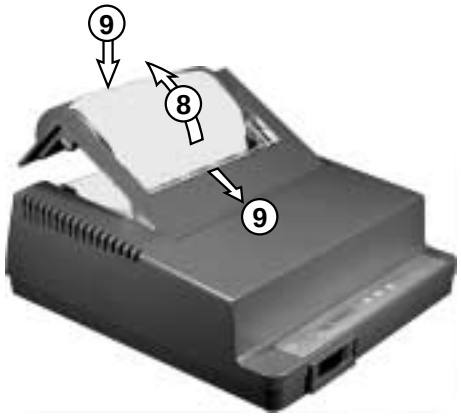
2. Switch the looking lever back.
3. Press the roll holders outwards and remove the paper roll.



4. Place new paper roll as illustrated on picture.
   Use only original paper!
5. Introduce the paper until it comes out on the other side.



6. Pull paper forward and align it.
7. Switch the looking lever into front position.



8. Guide paper through the slot of the cover.
9. Place the cover into the front stop and push it down until it engages.

10. Switch off selection (SEL key). Selection is desactivated when select light is off.
11. Press LineFeed key and check paper feed.
12. **Switch selection on again.**

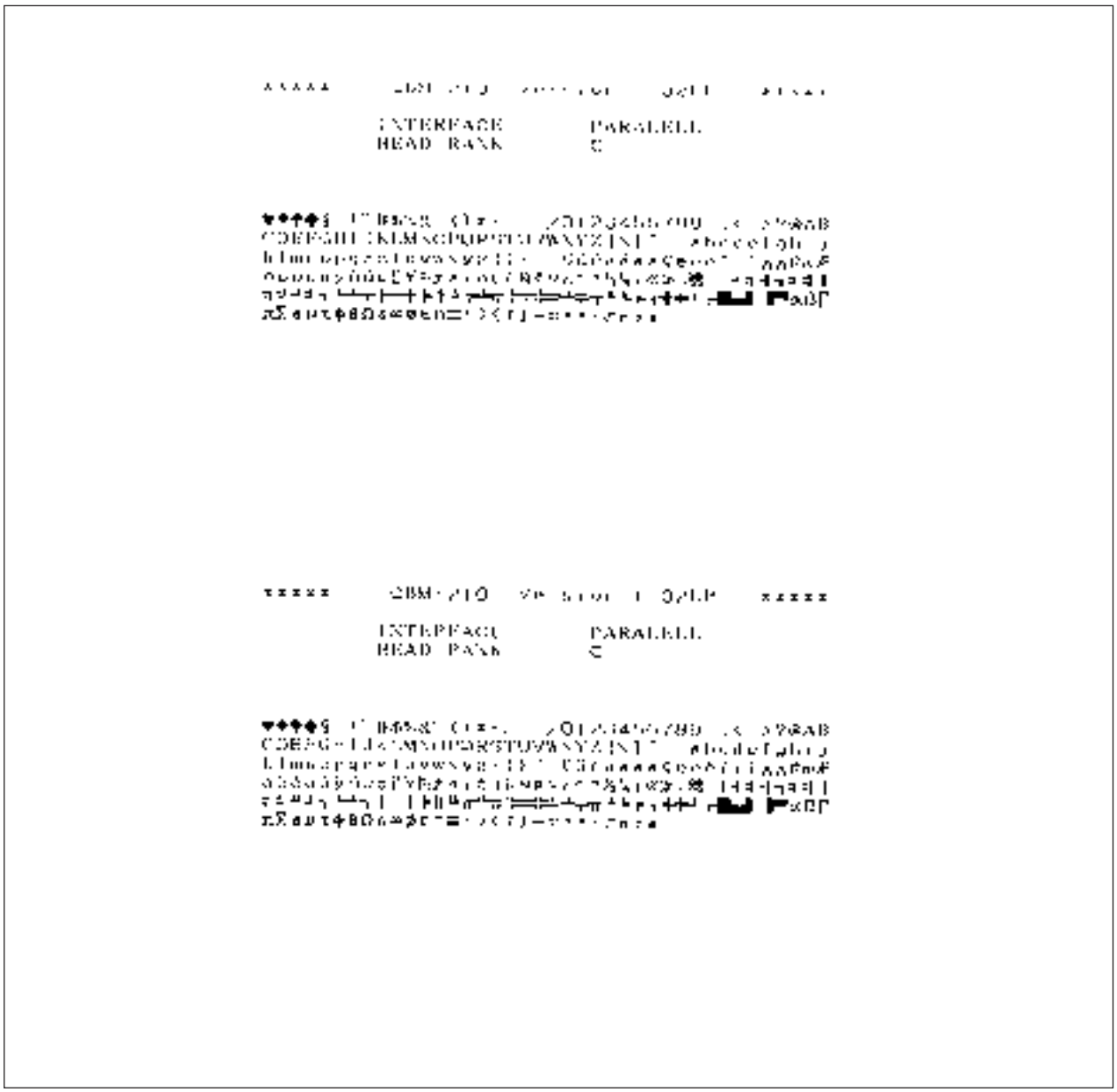
7.1.2 Printer test

For a test printout, switch the printer off (pos.13 on previous picture), hold down the SELECT and LineFeed key (pos.10 and 11 on previous picture) and while pressing turn the printer on again.

Two test printouts are now made. A part of the top line may be missing.
All the other lines must be printed out neatly and correctly. The grid must be even and complete.

If characters or lines aren't printed completely, the printer has to be exchanged.

If necessary contact your service-centre.

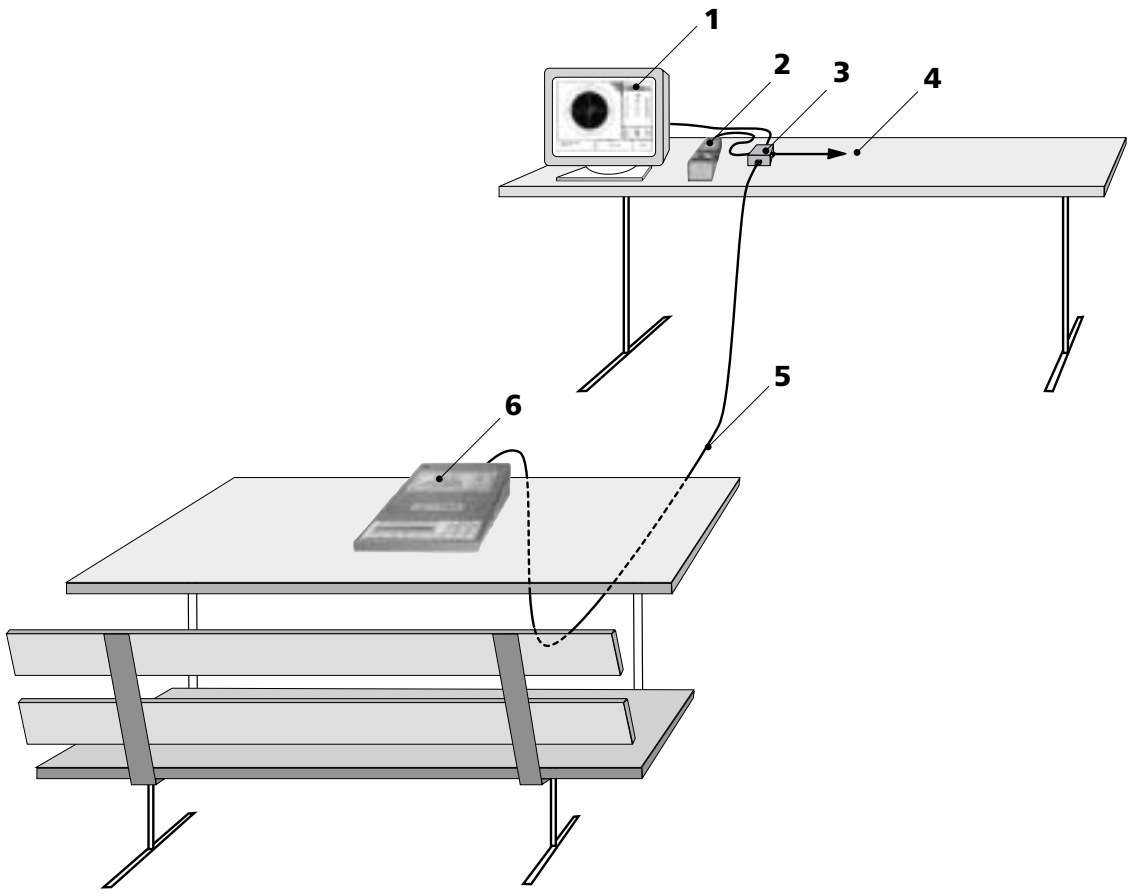


7.2 Remote control

7.2.1 General

The remote control RC931 allows to place the control unit and the monitor M931 at separate locations (for example: control unit on the secretary's table and the monitor next to the shooter).

With the remote control the shooter can access the most important functions out from the shooting place.



1. Monitor M931 9"
2. Remote control RC931
3. Distributor MD931
4. Socket to connect the shot sensor
5. Cable KV014-L (L = length)
6. Control unit CU931

7.2.2 Distributor MD931 and remote control RC931

The distributor MD931 is connected to the CU931 with the cable KV014-L (L = length, please determine when ordering). The CU931 socket for this is shown in chapter 1.2. pos. 20 and 21. Monitor M931, shot sensor and remote control RC931can be connected directly onto the distributor MD931.

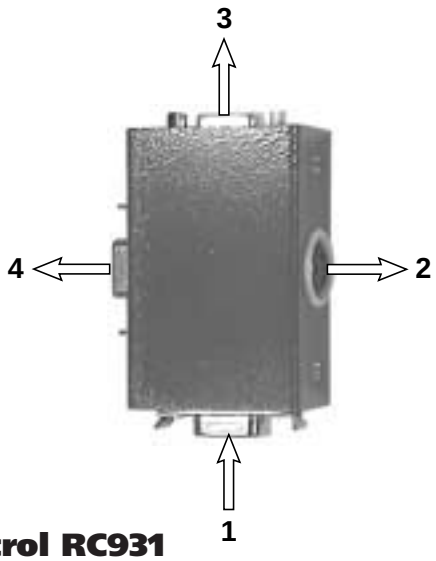
Distributor MD931

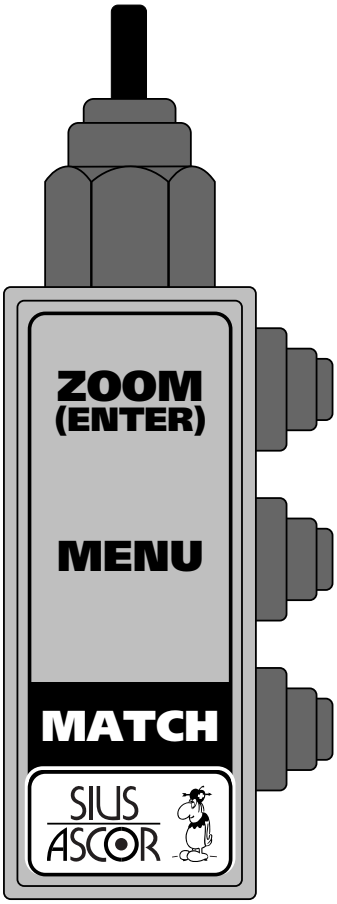
1 Socket to connect CU931

2. Socket to connect remote control RC931

3. Socket to connect monitor M931

4. Socket to connect for shot sensor





Remote control RC931

ZOOM: to select the next zoom level **(ENTER)**. If the menu is activated,enter selects the "inverse displayed" function.

MENU:
The first validation activates the menu, which is displayed on the monitor.
The menu has four functions: Clear display, print screencopy, print recordsheet and exit the menu.
Every next validation makes the cursor jump to the next function.

MATCH:
If sighters (sighting shots) are shot, the match function makes the shooting program change to match. As long as no shot has been fired in the match-mode the shooter has the possibility to return to sighters-mode, by pressing match.

7.3 Specialities for Rapid Fire

Every shooter in Rapid Fire disciplines uses 5 targets, which are called a bay.
The RFP25 target system consist of 5 S25/50-LON targets, equipped with red/green signal lights and a time control unit TCU25.

7.3.1 How to set the control unit CU25.

For **Olympic rapid fire**, where one shooter shoots on **five targets, one lane has to be set as master**. The shooting program is selected only on this master device, which can be any of the five (normally the most left or most right one).

If you select the "Olympic rapid fire" shooting program on one control unit, this control unit is made automatically master. The four other control units select automatically the same shooting program and are configured as slaves.

Each slave control unit displays the result ,shot on it's target, on it's monitor and makes a printout, if a printer D931 is connected on selection turned on. The master control unit displays and prints out the all five shots and the total of them.

If during the green phase one or more targets don't receive a shot, the corresponding control units display and print out a zero.

7.3.2 How to set the time control unit TCU25

The TCU25 controls the signal lights used for two bays.Hits are only computed if shot during a green phase, if shot during a red phase the result is zero and the overtime is displayed and printed out (for example OT = 0.34s).

The long-hole measurement which is made on turning targets is compensated with additional 0.2s.

The brightness of the red/green signal lights can be regulated with the brightness-control pos. 1 and 3 on the next picture.

The switch „Master ON/OFF" (not to confuse with „master of the control unit CU931) enables the TCU25 to be synchronised with the other TCU25.

If the program switch (pos.4) is in **position 0**, you can chose between program **menu 1 and 2**.

To choose program menu 1, press the start button once, as a confirmation the button blinks once.

To choose program menu 2, press the start button twice, as a confirmation the button blinks twice.

Any other position of the program switch is to select the shooting program, depending if menu 1or 2 is active.

For example in menu 1, program number 6 is the RFP
(Olympic **R**apid **F**ire **P**istol, green 8 seconds, red 3 seconds).

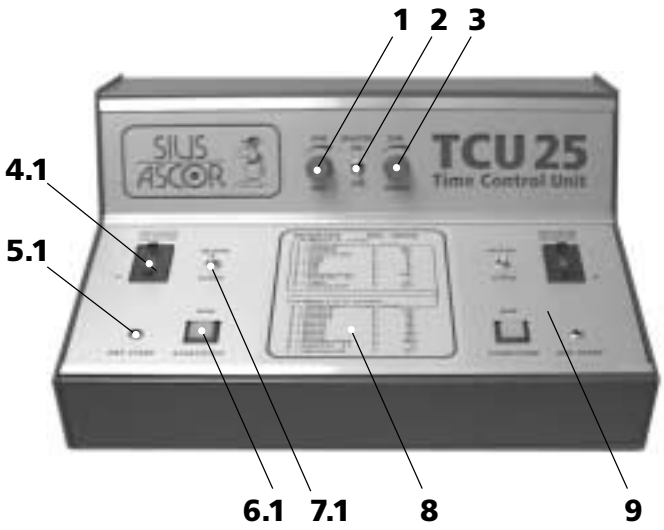
To start the program press the start/stop button situated on the TCU25 (pos. 6.1 and 6.2) or press the external start button (article number: TCU25A501). The external start button is connected to the socket pos. 5.1 and 5.2.

As soon as the start button is pressed, the red phase begins with the duration indicated on the table (pos.8). The start button is blinking.

After the red phase, the green phase starts, in which all the hits are evaluated.
A red followed by a green phase is one round.
Programs with more than one round, go through them automatically.

After the last green phase the blinking of the start button stops and a 20 seconds long red phase starts after which the signal lights turn off.

By pressing the start button a second time the program stops and the signal lights turn off. To restart the program you have to wait for 3 seconds, after which you can simply press the start button again.



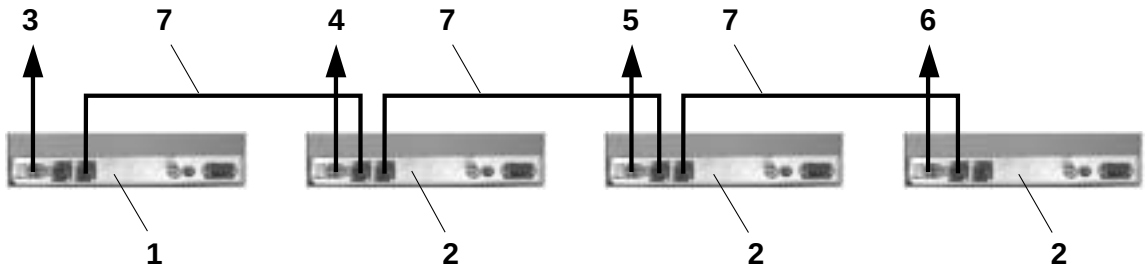
1. Brightness regulation of the red lights.
2. Master On/Off switch
3. Brightness regulation of the green lights.

4.1 Program switch of channel 1
5.1 Socket for external start/stop button
6.1 Start/stop button channel 1
7.1 Intern/slave switch of channel 1

8. Selectable programs
9. Command elements of channel 2 (analogous to channel 1)

For channel number 2 all is analog to channel number 1.

7.3.3 Synchronisation of several time control units



1. Device 1, in this example the master device.
2. Interconnected slave device, in this example devices 2-4.
3. Connection to target 1-5 (channel1) and targets 6-10 (channel 2).
4. Connection to target 11-15 (channel1) and targets 16-20 (channel 2).
5. Connection to target 21-25 (channel1) and targets 26-30 (channel 2).
6. Connection to target 31-35 (channel1) and targets 36-40 (channel 2).
   Cables pos. 3-6 = KP028
7. Cable pos. 7 = KP016

Switch position:

	Master On/Off	channel 1	channel 2
Switch number	**2 ***	**7.1 ***	**7.2 ***
TCU 1	**ON**	**Intern**	**Slave**
TCU 2	**OFF**	**Slave**	**Slave**
TCU 3	**OFF**	**Slave**	**Slave**
TCU 4	**OFF**	**Slave**	**Slave**

*** = numbers according to picture in chapter 7.3.2 on page 66.**

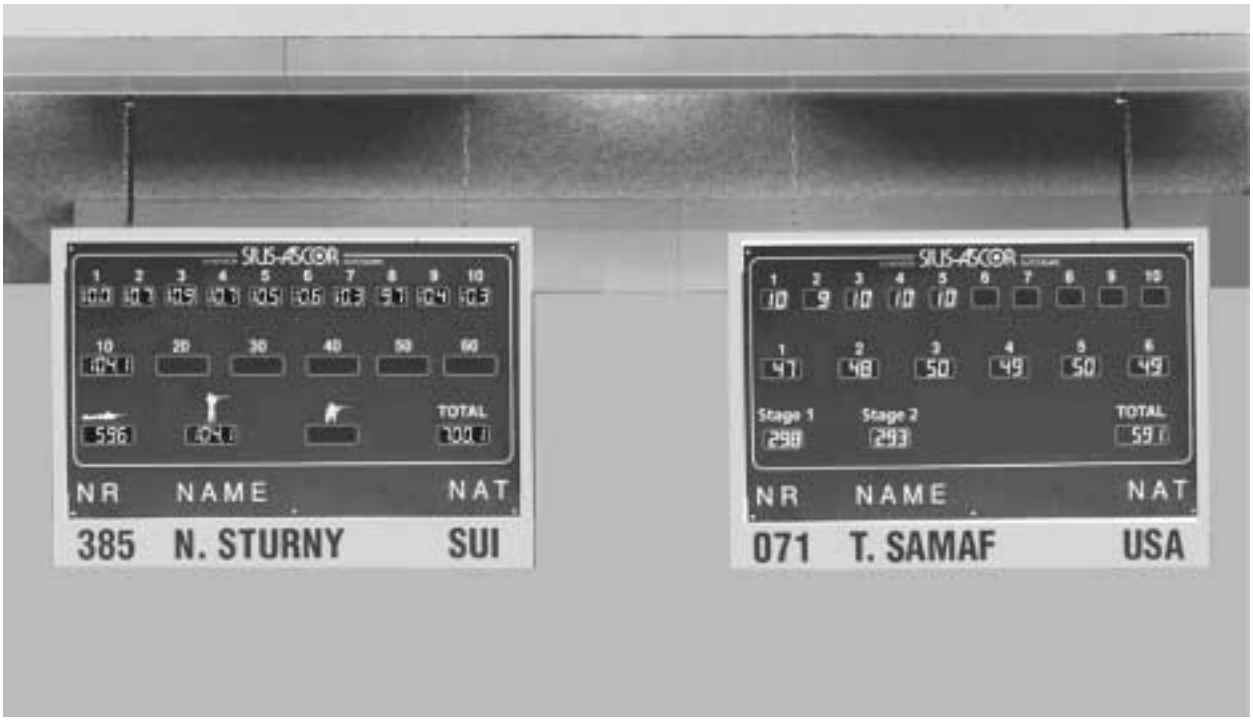
In this example all the all signal light from target 1 - 40 are controlled by the **first channel (= Master) of the first time control unit (TCU25).**

If one bay (a set of five targets) has to be used separately, just turn the switch (pos. 7) of the corresponding TCU25 on position INTERN. Now this channel can be programmed differently than the other, still synchronised, time control units.

7.4 Spectator's monitor M14 (14")

As spectator's monitor you can use our spectator's monitor 14" or the 9" Monitor (the shooter's monitor M931), or any other VGA monitor (for the connection see chapter 1.2 pos. 15).

7.5 Individual score boards

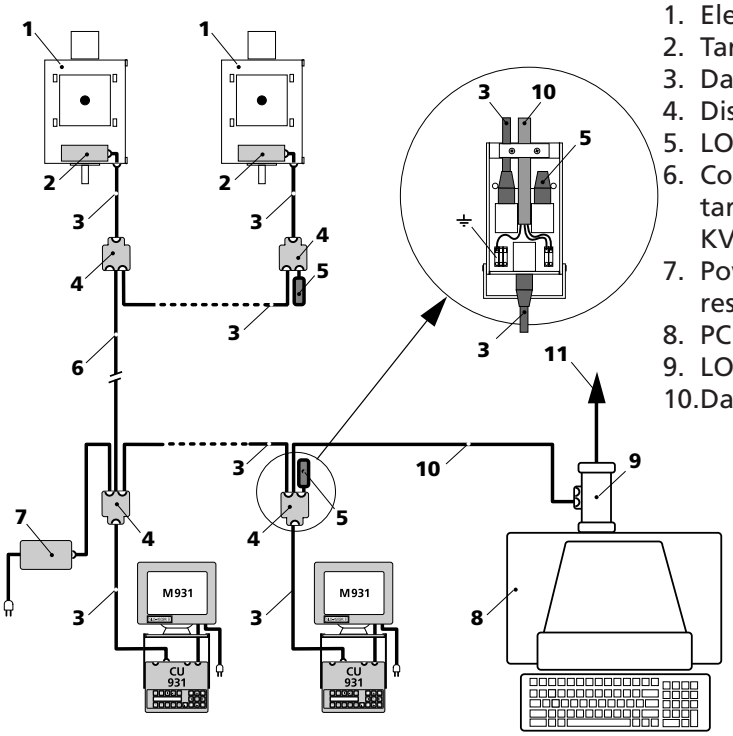


On the left side: Individual score board AZT03 for all 10-, 50-and 300-meter disciplines. On the right side: Individual score board AZT04 for all 25 meter disciplines.

For both individual score board types, an additional LED table, which can display the start number, the name and the nationality of the shooter, is available.

7.6 Connection to a PC

To integrate a PC or a laptop for the data capture and rank list production is very easy. You only need to plug a LONDONGLE to the parallel port (LPT printer port) of your PC or laptop.



1. Electronic target
2. Target electronic
3. Data bus-cable aa623-1.7
4. Distribution box VJ45Y
5. LON-bus termination VJ45R
6. Connection cable target side - shooters place KV021-* (* 0 cable length)
7. Power supply box NT931-10 for max. ten resp. NT931-2 for max. two firing lanes.
8. PC or laptop
9. LONDONGLE
10. Data bus-cable aa023-1.7 (length 1.7m)

On the PC or respectively on the laptop the software „SiusData“ has to be installed.SiusData captures the data and writes the results into an csv-table, ordered by the start numbers given in, at the control units.

SiusData is not a ranking program, but a basic data recording program.
With an Excel97 macro you can then import this csv-file. If you are familiar with Excel, it’s easy to create simple rank lists through sum fields and sorting. Printing through the formula generator is also possible.

(It’s possible to use other spread sheets software, but you have to program the data import and export.)

The program can also make graphical printouts of any shot "shooting program", by sending the data to the enclosed program ‚SiusLane‘.

See our homepage at http:\www.sius.com\ for the newest information.

8. Maintenance

8.1 General

Every SIUS system in impeccable technical condition assures a precise detection of every shot and also the correct scoring of them at anytime.
Please pay the necessary attention to this chapter.

8.1.1 Target maintenance

In the leaflet for target maintenance, which is delivered with every target, you find every important information about target maintenance.

If you don't find your maintenance leaflet anymore, you can download it at http://www.sius.com, order at your local agent or directly at SIUS AG.

8.1.2 Order materials

On the drawings in the maintenance guide, the article designations and part numbers of every piece are noted.

Please address you orders to your local agent or directly to:

SIUS AG

Im Langhag1
CH-8307 Effretikon
Switzerland

tel. (+41) 52 343 91 91
fax. (+41) 52 343 12 14

Internet: http://www.sius.com
E-mail: admin@sius.com